XTRAMUS

DApps-QoS Utility User's Manual

Preliminary

USM Ver 1.1

Foreword

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Revision History

Date	Ver	Software	History
2011/11/28	1.0	v0.9b008	First draft version
2011/12/07	1.0	v0.9b008	1. Change file name. 2. Rearrange chapter 1~2, moving DApps-QoS overview to chapter 1. 3. Adding descriptions about NuDOG-101T. 4. Updating Table of Contents. 5. Page 24, change “View” function figure and descriptions. 6. Minor format changes.
2012/06/28	1.1	V0.9b010	1. Adding NuDOG-801 description.(Page 11-15) 2. Supporting NuDOG-801 added.(Page 5, 25, 26, 35, 40) 3. Adding short-long function description. (Page 48, 50, 52, 54, 56, 58)

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1. DApps-QoS Overview

Network QoS (quality of service) is a way to classify the transmission priority of packets while the volume of to-be-transmitted packets is beyond the Ethernet switch or router's throughput capability. Packets with higher priorities are processed and transmitted first. For Ethernet frame, each packets can be tagged with a VLAN ID and CoS (class of service), and Layer 3 IP/UDP packets are marked according to the type of service they need. For Ethernet switch or router that supports QoS, packets higher CoS priority should be transmitted first if network traffic is congested. DApps-QoS can limit acceptable network traffic at receiving port, analyze the traffic distribution of packets with different priority received from router or switch, and test the performance of Layer 3 Router, Switch with QoS function.

DApps-QoS is designed for Xtramus Technologies NuDOG series handheld Ethernet testing devices listed in the table down below:

Devices Supporting DApps-QoS		
NuDOG-301C	**NuDOG-801**	**NuDOG-101T**

Also, please make sure that your PC meets the requirements listed in the table down below before installing DApps-2889-RM.

OS	Windows 2000/Windows XP	Windows Vista/Windows 7
CPU	Pentium 1.3GHz or Higher	
RAM	512MB RAM	1GB RAM
HDD	10 GB Available Space	

＊Note: Large amount of data will be generated while running DApps-QoS. It is recommended to preserve enough available Hard-Disk space to store these data.

Please see the sections down below for detailed information regarding to **NuDOG-801**, **NuDOG-301C** and **NuDOG-101T**.

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2. NuDOG-301C Descriptions

2.1. NuDOG-301C Overview

NuDOG-301C is a handheld device with two Gigabit ports for Ethernet testing. The main functions of NuDOG-301C include multi-streams generation, TAP/Loopback test, and NIC emulation.

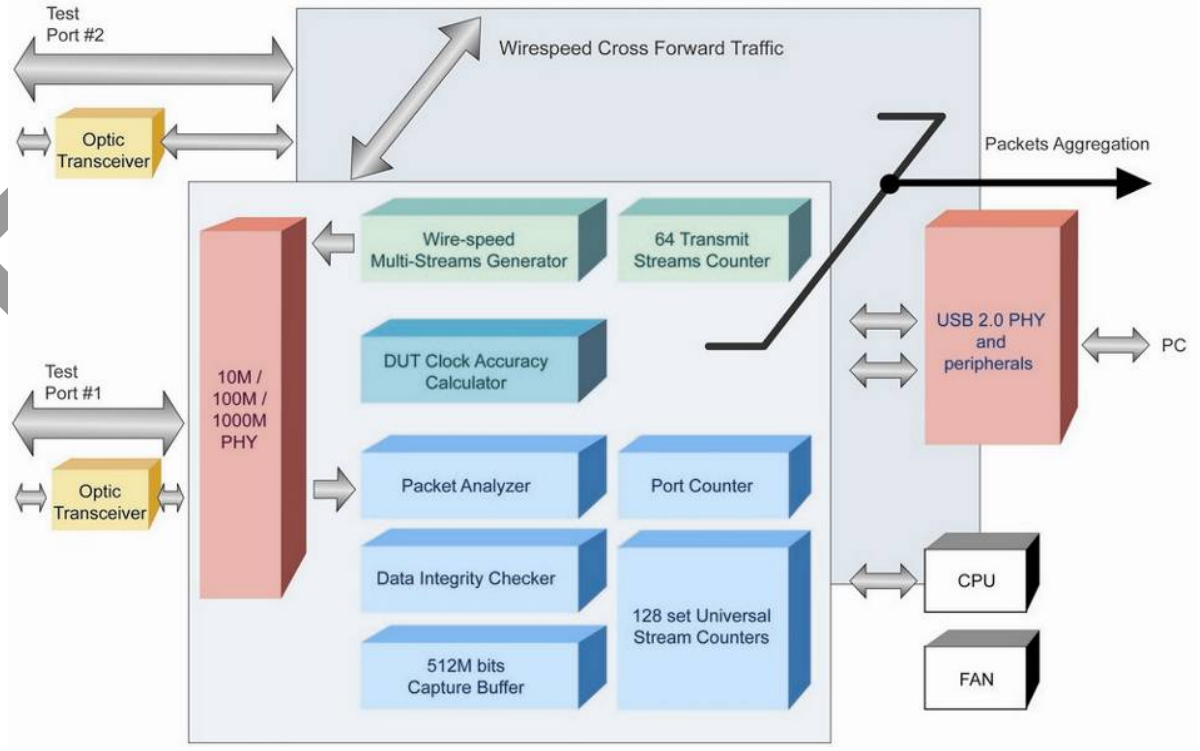
Connecting NuDOG-301C to its mini-USB port makes it possible for system configurations and managements. NuDOG-301C is an ideal device for in-field testing.

NuDOG-301C can work along with a series of utility software that qualify industrial standards such as RFC-2889, RFC-2544, and QoS. With these utilities, NuDOG-301C is able to conduct throughput test, latency test, error filtering test, forwarding test, and so on. Utility software can provide a user-friendly interface for different test configurations when setting test parameters and criteria. More optional software is available for extended test requirements.

With its unique Universal Stream Counter (USC), NuDOG-301C offers real-time statistics of network events during packet monitoring and capturing.

With these advantageous features, NuDOG-301C is your best partner for LAB researching and in-field troubleshooting.

NuDOG-301C block diagram



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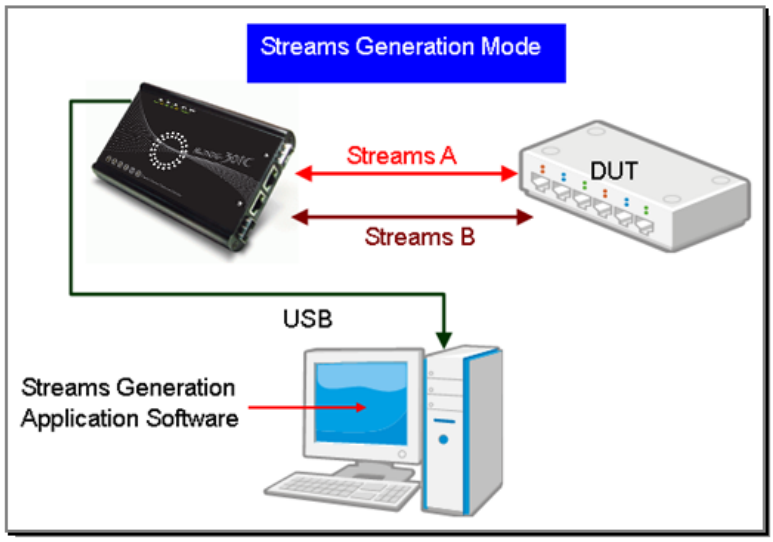
2.2. Features & Advantages of NuDOG-301C

- Hardware based wirespeed streams generation, analysis, network TAP and NIC
- High precision performance for measuring throughput, latency, packet loss and disordered sequence
- Wirespeed traffic capturing with programmable filter and trigger criteria
- Supports Universal Stream Counter (USC) with 128 streams
- RFC 2544 test suite
- RFC 2889 test suite
- Layer 1 and Layer 2 loopback test
- High precision 1 ppm temperature-compensated oscillator provides accurate clock speed to ensure the reliability of the tests
- Adding errors in transmitted traffic to simulate and test abnormal situations
- Real-time statistics for each port, including transmitted/received frame for VLAN, IPv4, IPv4 fragment, IPv4 extension , ICMP, ARP, total bytes/packets, CRC, IPCS error and over-and-under size frames
- Utility software with user-friendly interface that supports various parameter configurations and meets various test requirements
- 512Mbits wirespeed packet capture buffer per port

2.3. NuDOG-301C Applications in Different Modes

Stream Generation Mode



In Streams Generation mode, NuDOG-301C generates bi-directional network streams for test requirements as the illustration above.

Both NuDOG-301C's Port A and Port B can generate and receive test streams. The test streams are sent and returned to the same NuDOG-301C for DUT (device under test) analysis.

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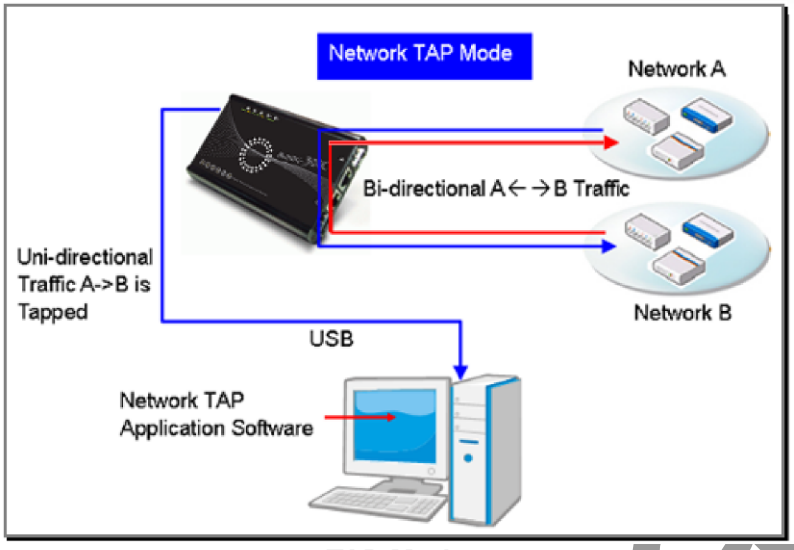
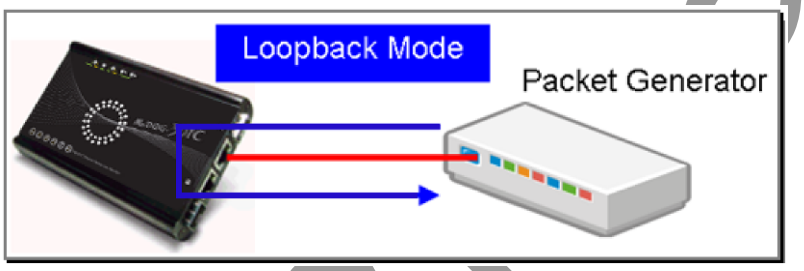
TAP/Loopback Mode



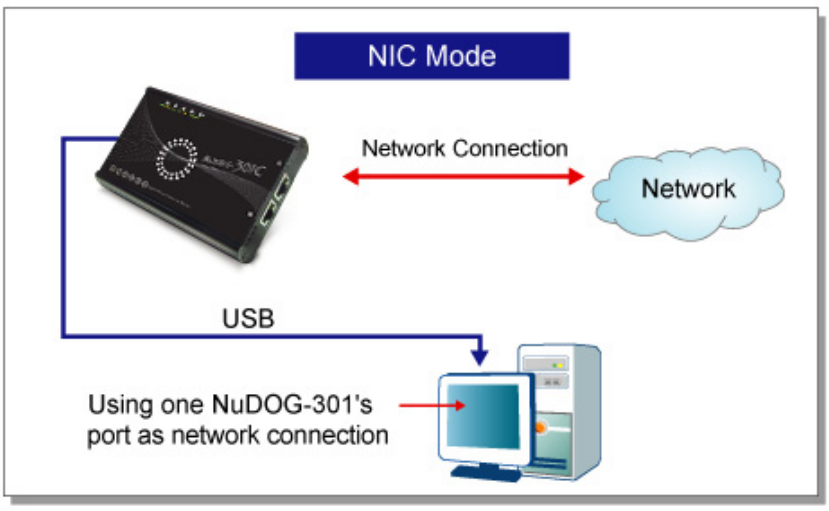
TAP Mode



Loopback Mode

In TAP mode, NuDOG-301C can monitor any data that flows through it. Network TAP is a method of monitoring network's situation dynamically without interference. NuDOG-301C can tap bi-directional or uni-directional traffic from different sides (port A and port B) and also provides abundant packet counters. In Loopback mode, NuDOG-301C resends the incoming streams back to the source.

NIC Mode



In this mode, NuDOG-301C simulates network interface card (NIC).

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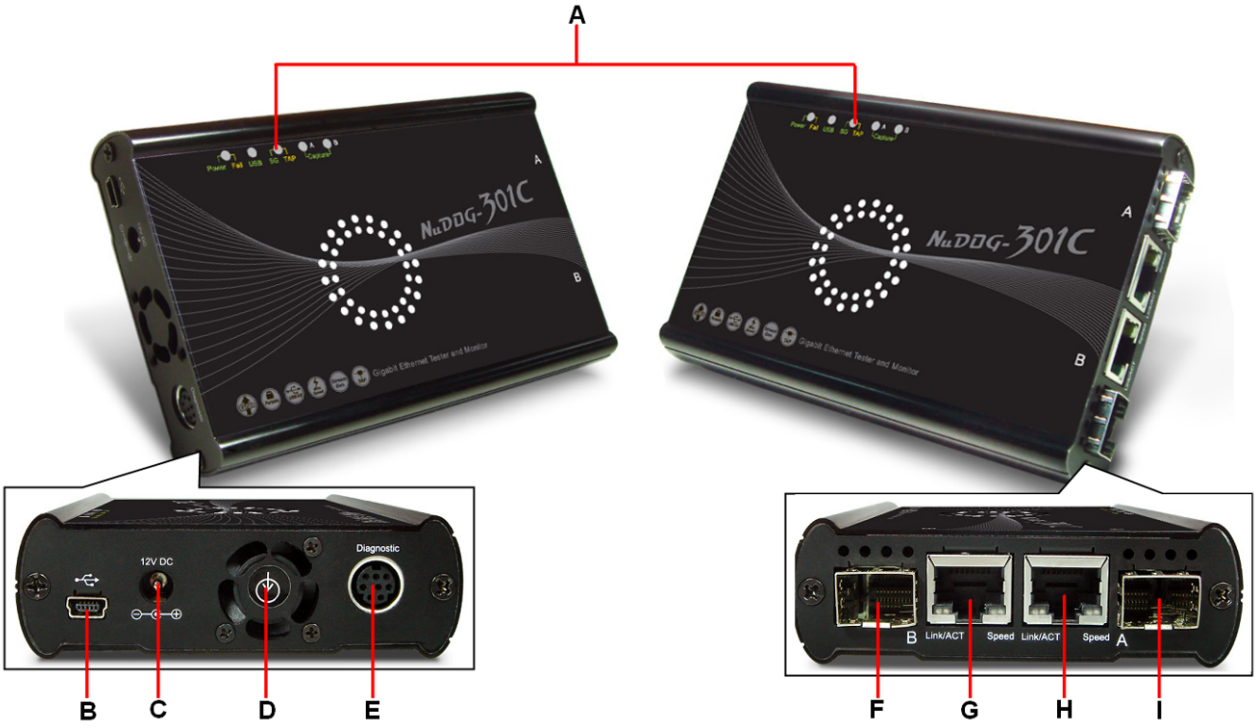
2.4. NuDOG-301C Interface Ports



NuDOG-301C Hardware Overview			
A	**LEDs**	LEDs that displays NuDOG-301C's status.	
B	**Mini-USB Port***	5 Pin Mini-B Receptacle USB Port. You can manage, configure, or update firmware/FPGA when connecting NuDOG-301C to your PC. While under TAP mode, this mini-USB port can also re-direct tapped packets to PC.	
C	**Power Jack**	12V DC Power Jack for connecting external power adapter.	
D	**Cooling FAN**	Fan hole with internal fan for ventilation.	
E	**Diagnostic Port**	8-Pin Mini-DIN Receptacle Diagnostic Port	
F	**Port B - SFP Port**	1000 Mbps Full Duplex SFP Port B	Only one port can be used at the same time.
G	**Port B - RJ45 Port**	10/100/1000 Mbps Half/Full RJ45 Port B	
H	**Port A - SFP Port**	1000 Mbps Full Duplex SFP Port A	Only one port can be used at the same time.
I	**Port A - RJ45 Port**	10/100/1000 Mbps Half/Full RJ45 Port A	

***Please note that when connecting NuDOG-301C with PC via its USB port, DO NOT use a USB hub**

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2.5. NuDOG-301C LED Status

LED	Status	Description
Power/Fail	Green Blinking	Power is ON and working properly
	Yellow Blinking	System failed
USB	Green Blinking	USB of this device is linked to PC
SG/TAP	Green	NuDOG-301C is working under Stream Generation Mode
	Yellow	NuDOG-301C is working under TAP Mode
	OFF	NuDOG-301C is working under NIC (Network Interface Card) mode
Capture A/B	Green	Port A/B is under Capturing Mode
Link/ACT	Green ON	The RJ45 Port is connected to DUT/Network
	Green Blinking	NuDOG-301C is transmitting or receiving data
Speed	Green ON	1000Mbps connection
	Green Blinking	100Mbps connection
	OFF	10Mbps connection if Link/ACT is ON or blinking

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3. NuDOG-801 Descriptions

3.1. NuDOG-801 OVERVIEW

NuDOG-801 is a handheld device with two 10 Gigabit SFP+ Ports for Ethernet testing. The main functions of NuDOG-801 include multi-streams generation and NIC emulation.

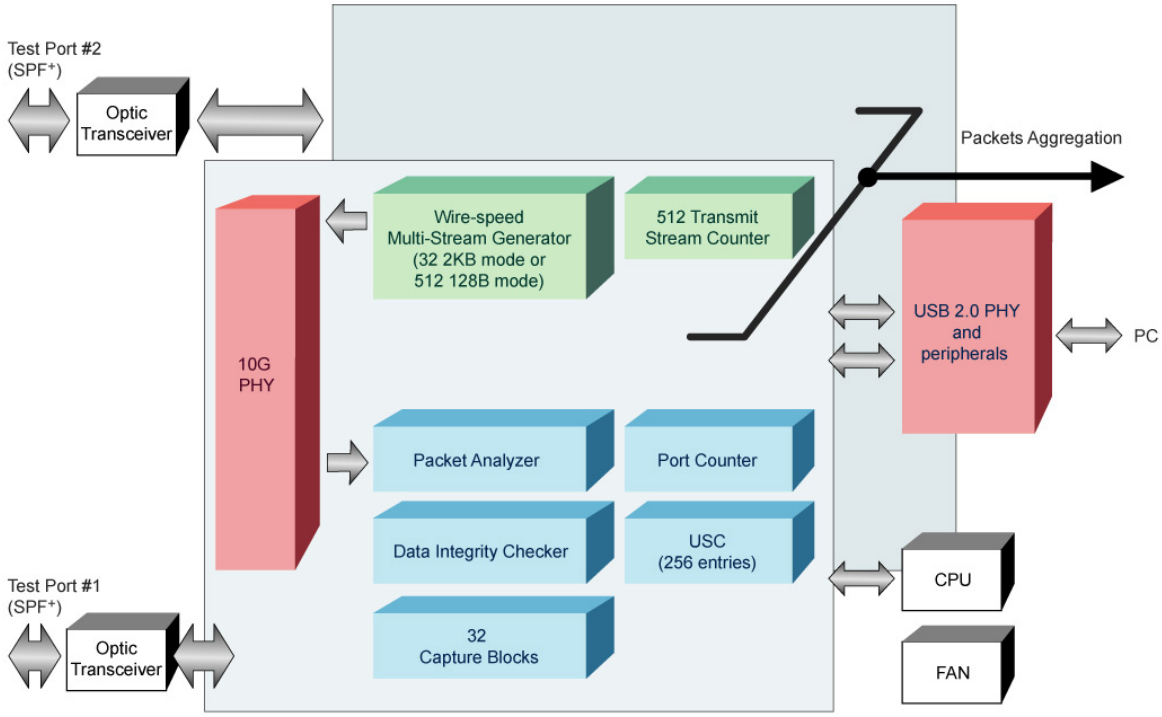
Connecting NuDOG-801 to its Standard-B Receptacle USB Port makes it possible for system configurations and managements. NuDOG-801 is an ideal device for in-field testing.

NuDOG-801 can work along with a series of utility softwares that qualify industrial standards such as RFC 2889, RFC 2544, and QoS. With these utilities, NuDOG-801 is able to conduct throughput test, latency test, error filtering test, forwarding test, and so on. Xtramus' utility softwares provide a user-friendly interface for different test configurations when setting test parameters and criteria. More optional softwares are available for extended test requirements.

With its unique Universal Stream Counter (USC), NuDOG-801 offers real-time statistics of network events during packet monitoring and capturing.

With these advantageous features, NuDOG-801 is your best partner for LAB researching and in-field troubleshooting.

NuDOG-801C block diagram

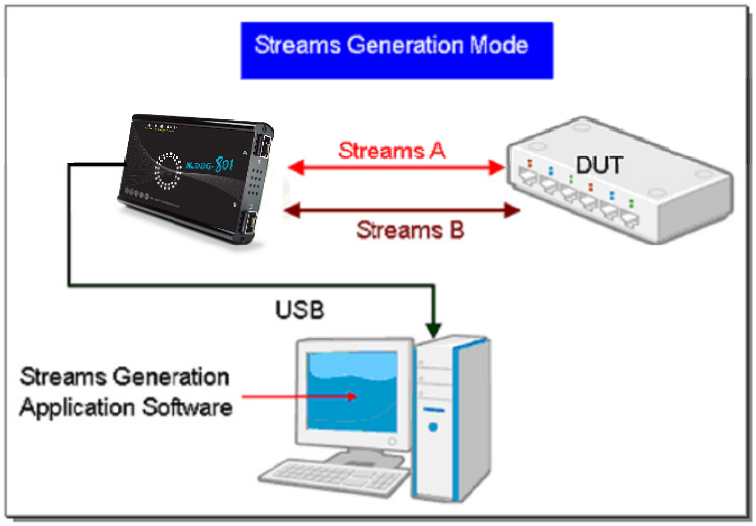


3.2. Features & Advantages of NuDOG-801

- Hardware based wirespeed streams generation, analysis, and NIC
- High precision performance for measuring throughput, latency, packet loss and disordered sequence
- Wirespeed traffic capturing with programmable filter and trigger criteria
- Supports Universal Stream Counter (USC) with 256 streams
- RFC 2544 test suite
- RFC 2889 test suite
- High precision 1 ppm temperature-compensated oscillator provides accurate clock speed to ensure the reliability of the tests
- Adding errors in transmitted traffic to simulate and test abnormal situations
- Real-time statistics for each port, including transmitted/received frame for VLAN, IPv4, IPv4 fragment, IPv4 extension , ICMP, ARP, total bytes/packets, CRC, IPCS error and over-and-under size frames
- Supports IPv6
- Utility softwares with user-friendly interface that supports various parameter configurations and meets various test requirements
- 32 Capture Blocks for each Test Port

3.3. NuDOG-801 Applications in Different Modes

Stream Generation Mode



In Streams Generation mode, NuDOG-801 generates bi-directional network streams for test requirements as the illustration above.

Both NuDOG-801's Port A and Port B can generate and receive test streams. The test streams are sent and returned to the same NuDOG-801 for DUT (device under test) analysis.

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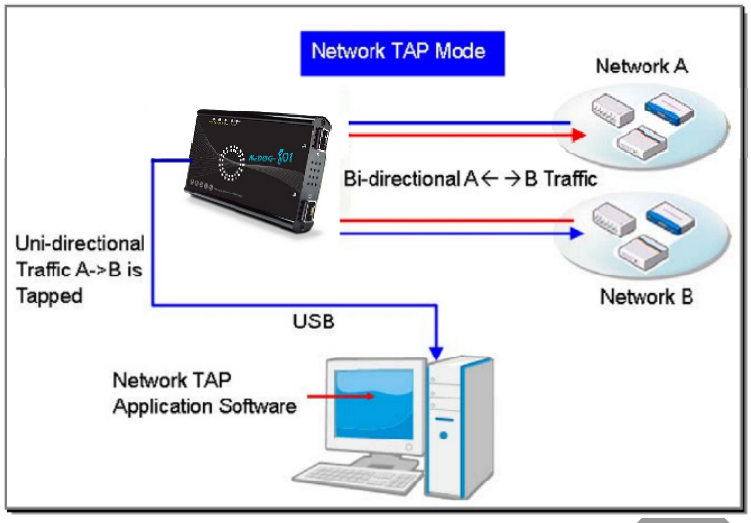
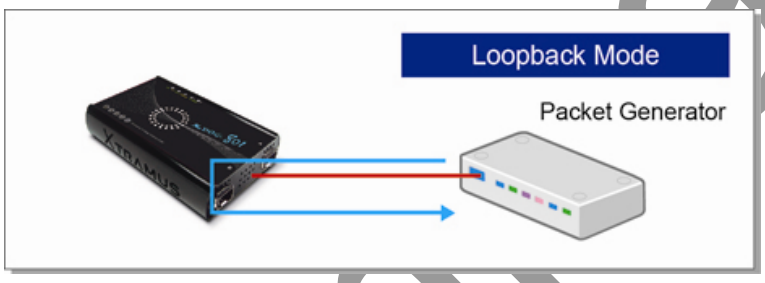
TAP/Loopback Mode



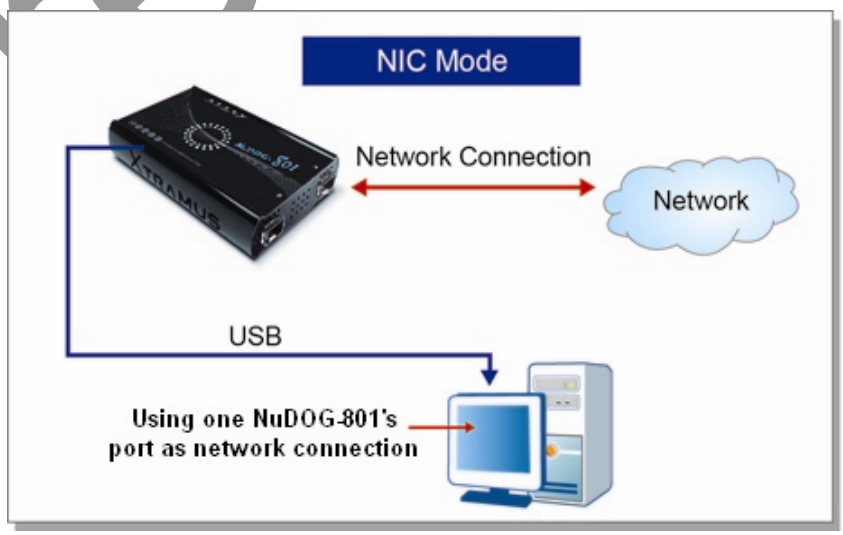
TAP Mode



Loopback Mode

In TAP mode, NuDOG-801 can monitor any data that flows through it. Network TAP is a method of monitoring network's situation dynamically without interference. NuDOG-801 can tap bi-directional or uni-directional traffic from different sides (port A and port B) and also provides abundant packet counters. In Loopback mode, NuDOG-801 resends the incoming streams back to the source.

NIC Mode



In this mode, NuDOG-801 simulates network interface card (NIC).

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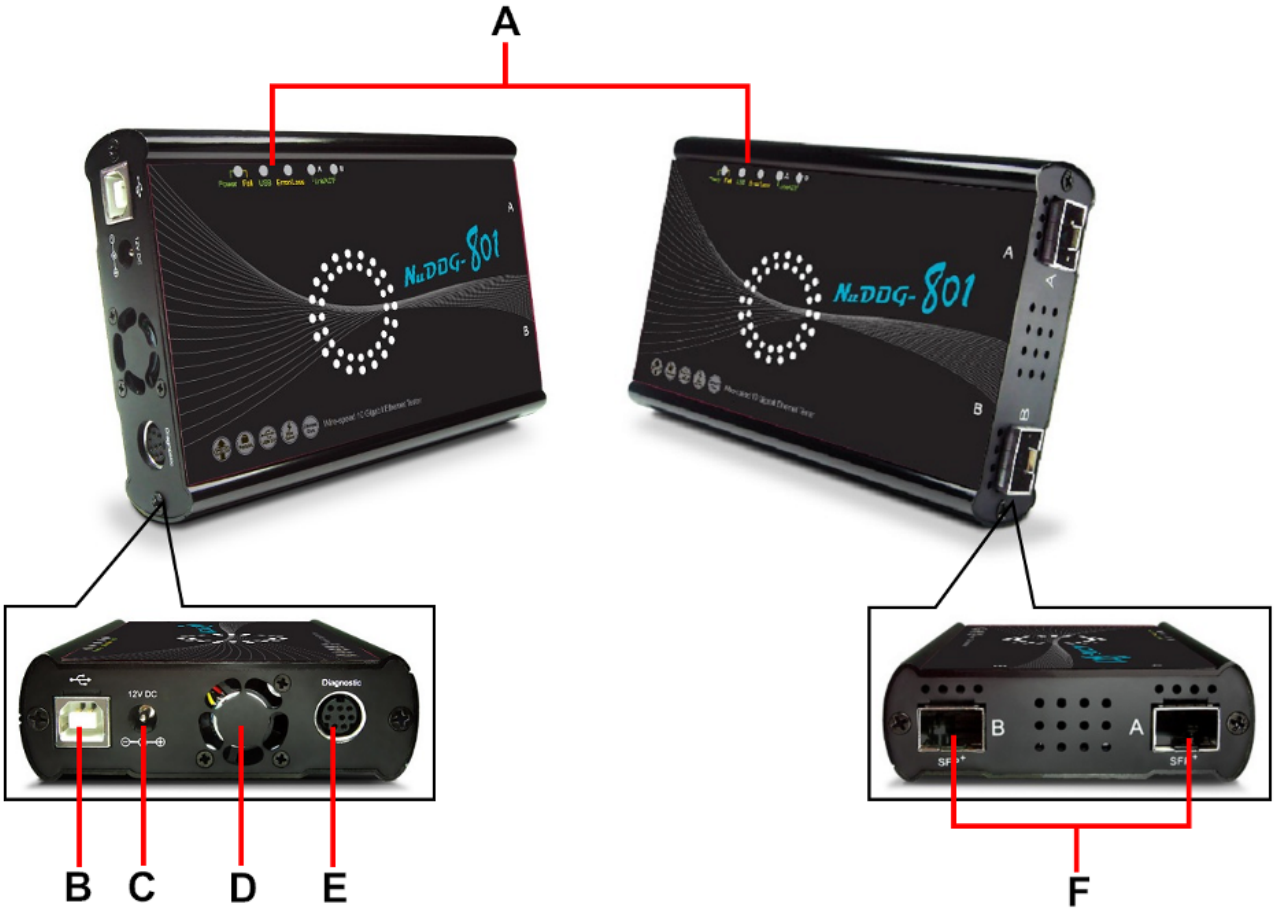
3.4. NuDOG-801 Interface Ports



NuDOG-801C Hardware Overview		
A	**LEDs**	LEDs that displays NuDOG-801C's status.
B	**Mini-USB Port***	5 Pin Mini-B Receptacle USB Port. You can manage, configure, or update firmware/FPGA when connecting NuDOG-801C to your PC. While under TAP mode, this mini-USB port can also re-direct tapped packets to PC.
C	**Power Jack**	12V DC Power Jack for connecting external power adapter.
D	**Cooling FAN**	Fan hole with internal fan for ventilation.
E	**Diagnostic Port**	8-Pin Mini-DIN Receptacle Diagnostic Port
F	**10 Gigabit Wirespeed SFP+ Port**	10 Gigabit Wirespeed SFP+ Port

***Please note that when connecting NuDOG-801C with PC via its USB port, DO NOT use a USB hub**

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3.5. NuDOG-801 LED Status

LED	Status	Description
Power/Fail	**Green Blinking**	Power is ON and working properly
	Yellow Blinking	System failed
USB	**Green Blinking**	USB of this device is linked to PC
Error/Loss	**Yellow Blinking**	CRC error or packet loss is occurring
	OFF	No CRC error or packet loss is occurring
Link/ACT	**Green ON**	The RJ45 Port is connected to DUT/Network
	Green Blinking	NuDOG-801 is transmitting or receiving data

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4. NuDOG-101T Descriptions

4.1. NuDOG-101T OVERVIEW

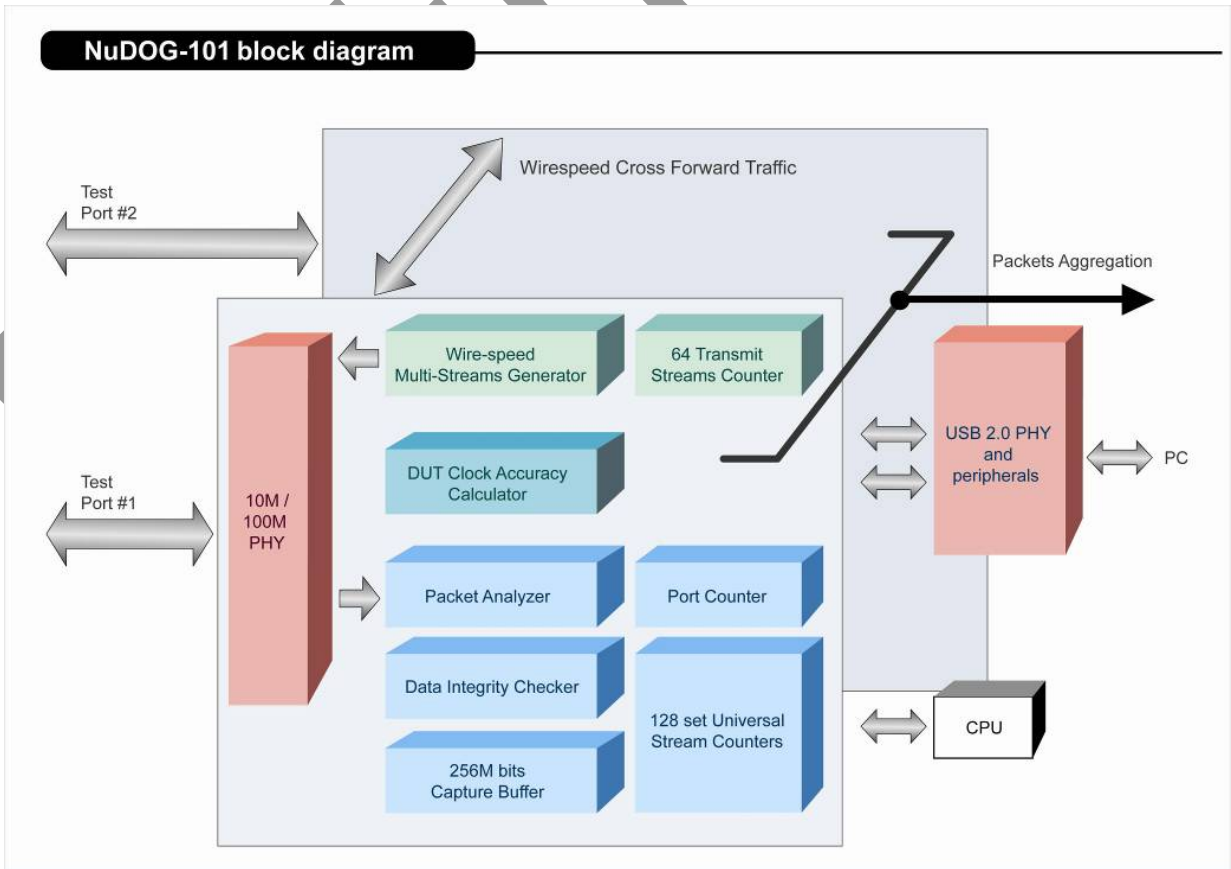
NuDOG-101T is a handheld device with two ports for Ethernet testing. The main functions of NuDOG-101T include multi-streams generation, TAP/Loopback test, and NIC emulation.

Connecting NuDOG-101T to its mini-USB port makes it possible for system configurations and managements. NuDOG-101T is an ideal device for in-field testing.

NuDOG-101T can work along with a series of utility softwares that qualify industrial standards such as RFC 2889, RFC 2544, and QoS. With these utilities, NuDOG-101T is able to conduct throughput test, latency test, error filtering test, forwarding test, and so on. These utility softwares provide a user-friendly interface for making different test configurations and setting test parameters and criteria. More optional softwares are available for extended test requirements.

With its unique Universal Stream Counter (USC), NuDOG-101T offers real-time statistics of network events during packet monitoring and capturing.

With these advantageous features, NuDOG-101T is your best partner for LAB researching and in-field troubleshooting.

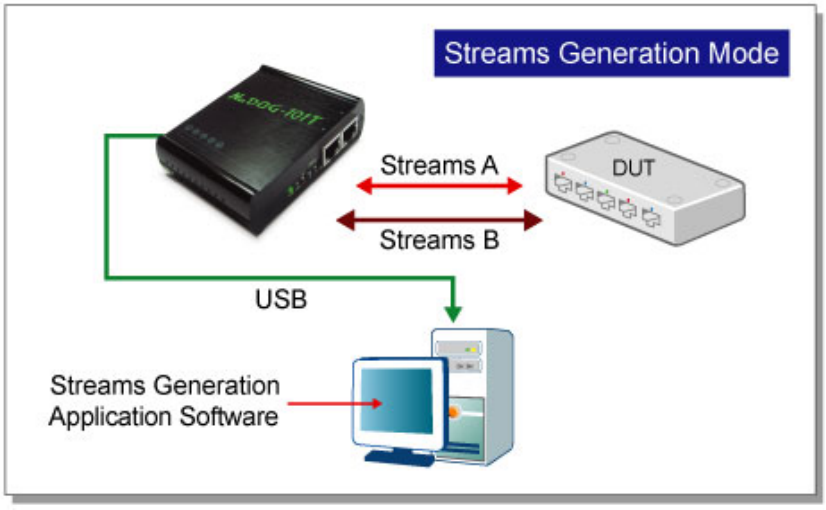


4.2. Features & Advantages of NuDOG-101T

- Hardware based wirespeed streams generation, analysis, network TAP and NIC
- High precision performance for measuring throughput, latency, packet loss and disordered sequence
- Wirespeed traffic capturing with programmable filter and trigger criteria
- Supports Universal Stream Counter (USC) with 128 streams
- RFC 2544 test suite
- RFC 2889 test suite
- Layer 1 and Layer 2 loopback test
- High precision 1 ppm temperature-compensated oscillator provides accurate clock speed to ensure the reliability of the tests
- Injecting errors in transmitted traffic to simulate and test abnormal situations
- Real-time statistics for each port, including transmitted /received frame for VLAN, IPv4, IPv4 fragment, IPv4 extension , ICMP, ARP, total bytes/packets, CRC, IPCS error and over-and-under size frames
- User-friendly interface that supports various parameter configurations and meets various test requirements
- 256Mbits packet capture buffer per port

4.3. NuDOG-101T Applications in Different Modes

Stream Generation Mode



In Streams Generation mode, NuDOG-101T generates bi-directional network streams for test requirements as the illustration above.

Both NuDOG-101T's Port A and Port B can generate and receive test streams. The test streams are sent and returned to the same NuDOG-101T for DUT (device under test) analysis.

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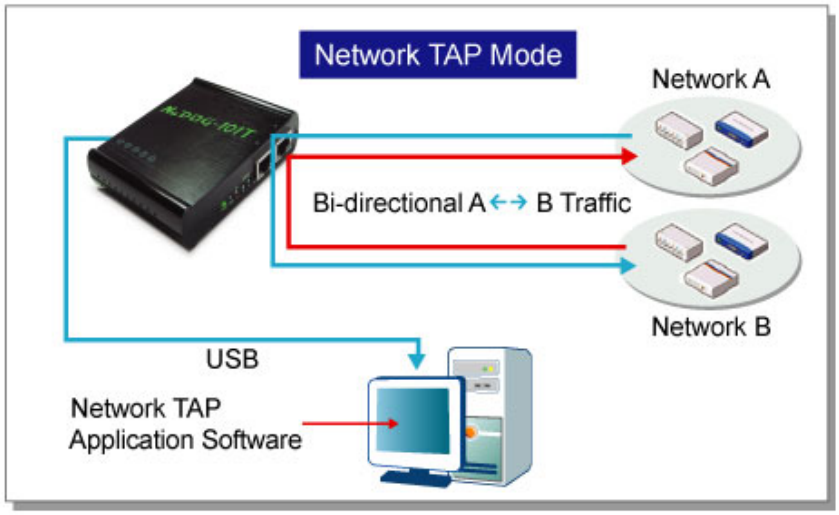
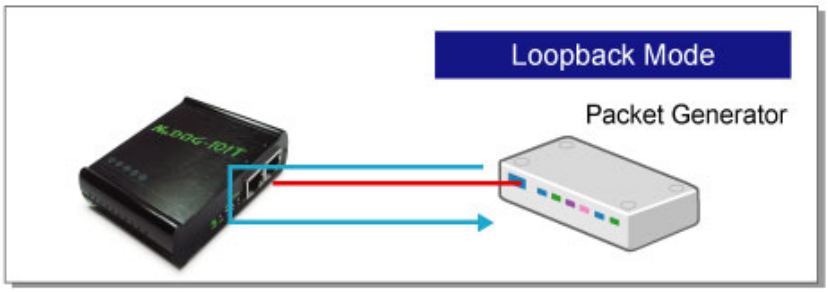
TAP/Loopback Mode



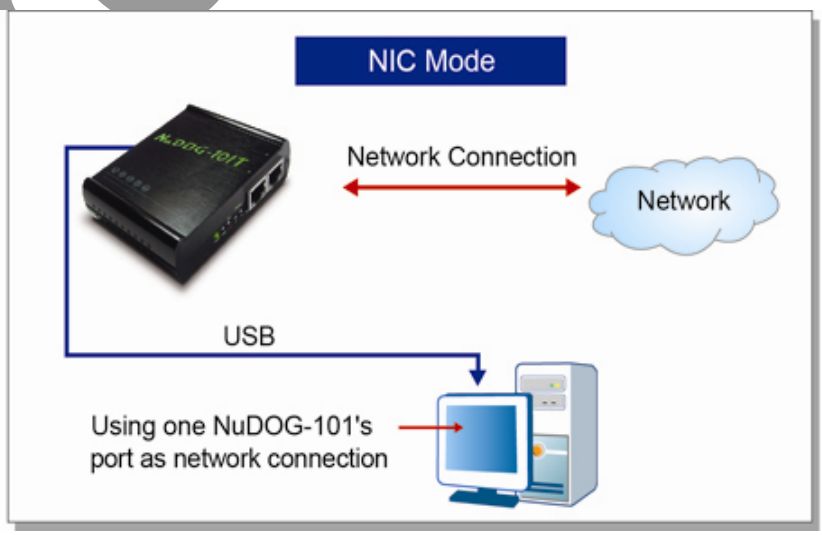
TAP Mode



Loopback Mode

In TAP mode, NuDOG-101T can monitor any data that flows through it. Network TAP is a method of monitoring network's situation dynamically without interference. NuDOG-101T can tap bi-directional or uni-directional traffic from different sides (port A and port B) and also provides abundant packet counters. In Loopback mode, NuDOG-101T resends the incoming streams back to the source.

NIC Mode



In this mode, NuDOG-101T simulates network interface card (NIC).

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4.4. NuDOG-101T Interface Ports

NuDOG-101T Hardware Overview	
A	Mini-USB Port for connecting NuDOG-101T to PC or for power supply.
B	LEDs that display NuDOG-101T's system status.
C	Interface Port A/B for connecting NuDOG-101T to DUT or network.

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4.5. NuDOG-101T LED Status

LED	Status	Description
Power	**Green Blinking**	Power is ON and working properly
	Yellow Blinking	System failed
USB	**Green Blinking**	USB of this device is linked to PC
PG/TAP	**Green**	NuDOG-101T is working under Packet Generation Mode
	Yellow	NuDOG-101T is working under TAP Mode
	OFF	NuDOG-101T is working under NIC (Network Interface Card) mode
Capture A/B	**Green**	Port A/B is under Capturing Mode
Link/ACT	**Green ON**	The RJ45 Port is connected to DUT/Network
	Green Blinking	NuDOG-101T is transmitting or receiving data
Speed	**Green ON**	1000Mbps connection
	Green Blinking	100Mbps connection
	OFF	10Mbps connection if Link/ACT is ON or blinking

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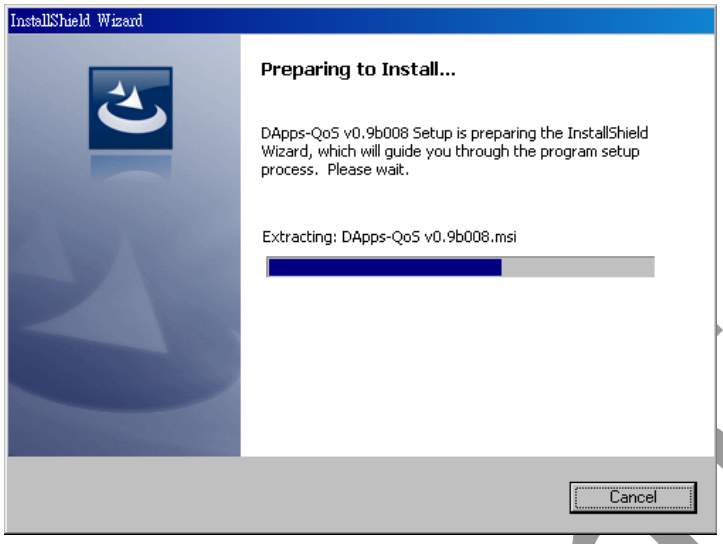
5. Installing/Uninstalling DApps-QoS

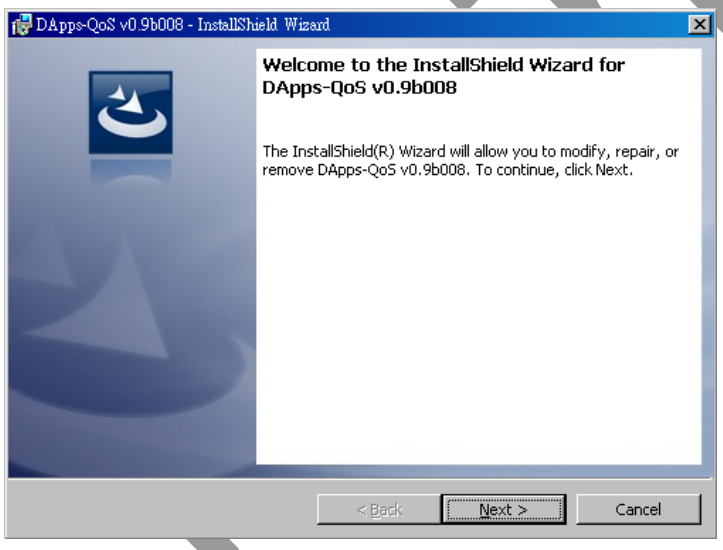
Please follow the steps down below to install DApps-QoS. Also, please note that DO NOT connect your NuDOG-301C to your PC before DApps-QoS is properly installed on your PC.

Installing DApps-QoS

1. Double-click DApps-QoS installation program and start the installation process*.


InstallShield Wizard
Preparing to Install...
DApps-QoS v0.9b008 Setup is preparing the InstallShield Wizard, which will guide you through the program setup process. Please wait.
Extracting: DApps-QoS v0.9b008.msi
Cancel

2. InstallShield Wizard is starting to install DApps-QoS. If you would like to cancel installation, click "**Cancel**".


DApps-QoS v0.9b008 - InstallShield Wizard
Welcome to the InstallShield Wizard for DApps-QoS v0.9b008
The InstallShield(R) Wizard will allow you to modify, repair, or remove DApps-QoS v0.9b008. To continue, click Next.
< Back
Next >
Cancel

3. Click "**Next**" to continue installation.

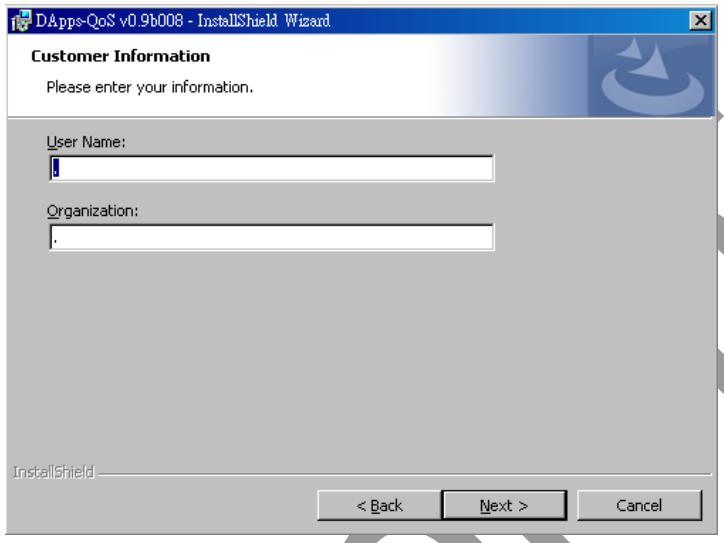
***Note:** Due to different Operating Systems or system settings, warning messages might pop up when installing DApps-QoS or driver for your device. When this occurs, please choose the options on these pop-up warning messages that allow you to continue installing DApps-QoS or device driver.

Preliminary

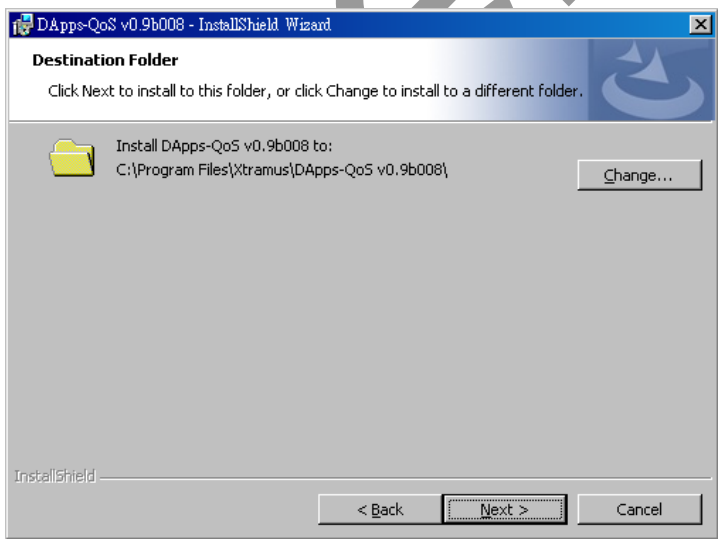
Installing DApps-QoS

DApps-QoS v0.9b008 - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
End User License Agreement
IMPORTANT NOTICE
This is a license agreement between you (either an individual or a single entity) and Xtramus Technologies ("Xtramus").
Before installing or using this software, please read the following license terms carefully. By installing or using this software, you are deemed to accept this license agreement. Do not install or use this software if you do not accept or agree with these license terms.
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
InstallShield
< Back
Next >
Cancel

4. Click "**I accept the terms in the license agreement**", and click "**Next**" to continue.



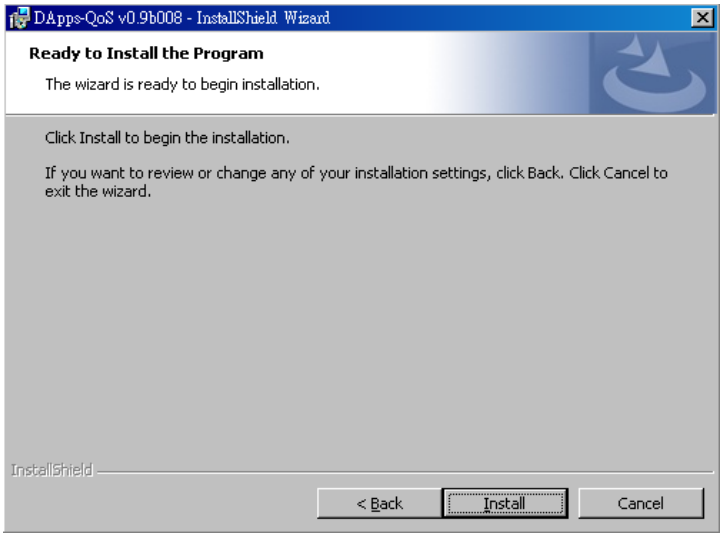
5. You can input **Username** and **Organization** in the related fields. Click "**Next**" to continue.


DApps-QoS v0.9b008 - InstallShield Wizard
Destination Folder
Click Next to install to this folder, or click Change to install to a different folder.
Install DApps-QoS v0.9b008 to:
C:\Program Files\Xtramus\DApps-QoS v0.9b008\
Change...
InstallShield
< Back
Next >
Cancel

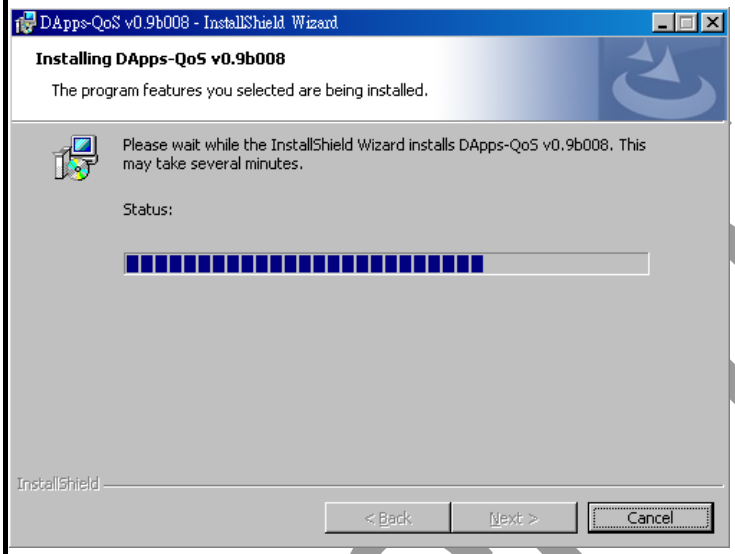
6. Click the **Change…** button to install the program to another folder, or click **Next** button to install the program into the default destination folder, and then continue next step. Click **Back** button to go back to the previous step to modify.

Preliminary

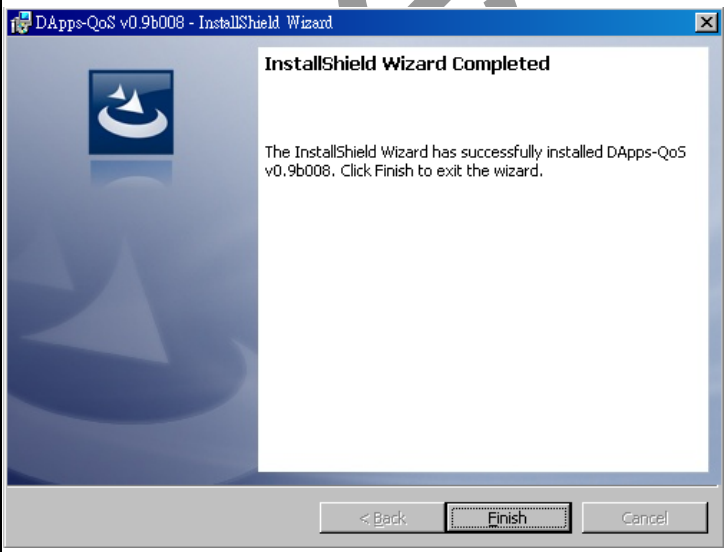
Installing DApps-QoS


DApps-QoS v0.9b008 - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

7. DApps-QoS InstallShield Wizard will start installing momentarily. Click "**Install**" button to continue.


DApps-QoS v0.9b008 - InstallShield Wizard
Installing DApps-QoS v0.9b008
The program features you selected are being installed.
Please wait while the InstallShield Wizard installs DApps-QoS v0.9b008. This may take several minutes.
Status:
InstallShield
< Back
Next >
Cancel

8. InstallShield Wizard is installing DApps-QoS.

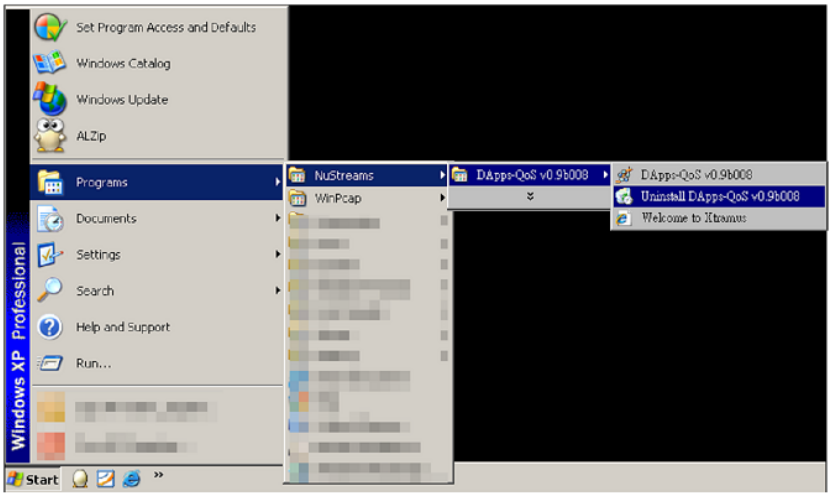

DApps-QoS v0.9b008 - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed DApps-QoS v0.9b008. Click Finish to exit the wizard.
< Back
Finish
Cancel

9. DApps-QoS installation completes. Click **Finish** button to exit.

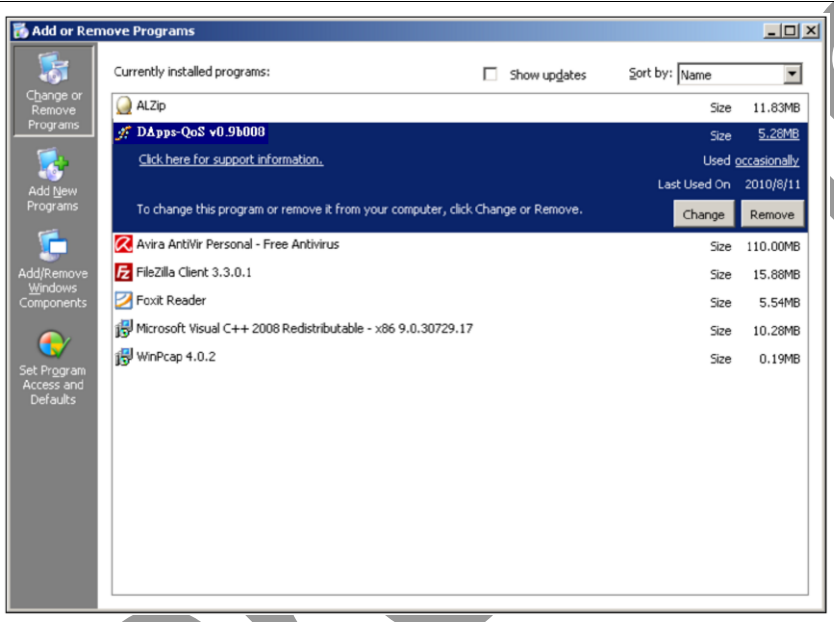
Preliminary

You can uninstall DApps-QoS by:

Uninstalling DApps-QoS



- Click **Start** → **Programs** → **Xtramus** → **DApps-QoS** → **Uninstall DApps-QoS**.


Add or Remove Programs
Change or Remove Programs
Add New Programs
Add/Remove Windows Components
Set Program Access and Defaults
Currently installed programs:
Show updates
Sort by: Name
ALZip Size 11.83MB
DApps-QoS v0.9b008 Size 5.28MB
Click here for support information.
Used occasionally
Last Used On 2010/8/11
To change this program or remove it from your computer, click Change or Remove.
Change
Remove
Avira AntiVir Personal - Free Antivirus Size 110.00MB
FileZilla Client 3.3.0.1 Size 15.88MB
Foxit Reader Size 5.54MB
Microsoft Visual C++ 2008 Redistributable - x86 9.0.30729.17 Size 10.28MB
WinPcap 4.0.2 Size 0.19MB

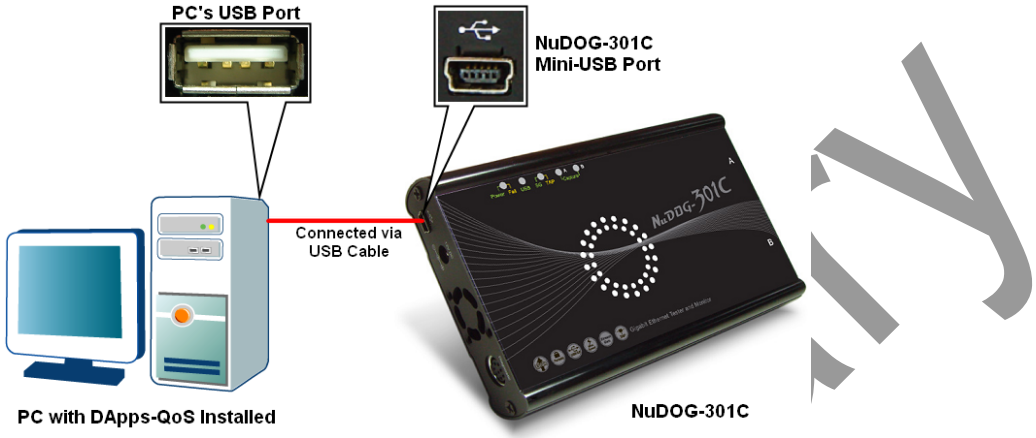
- Go to the **Control Panel**, choose **DApps-QoS** from installed program list, and click "**Remove**" to uninstall.

Preliminary

6. DApps-QoS Functions Overview

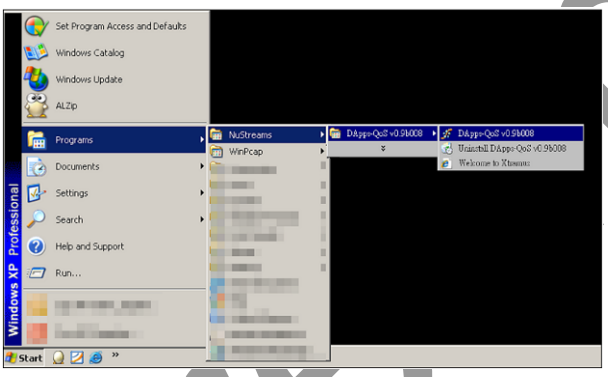
6.1. Starting DApps-QoS

Before starting DApps-QoS, your PC and NuDOG-301C/NuDOG-801/NuDOG-101T shall be connected properly. The figure down below illustrates connecting PC and NuDOG-301C. You can connect NuDOG-801/NuDOG-101T with PC in the same manner.



There are two ways to start DApps-QoS:

Starting DApps-QoS

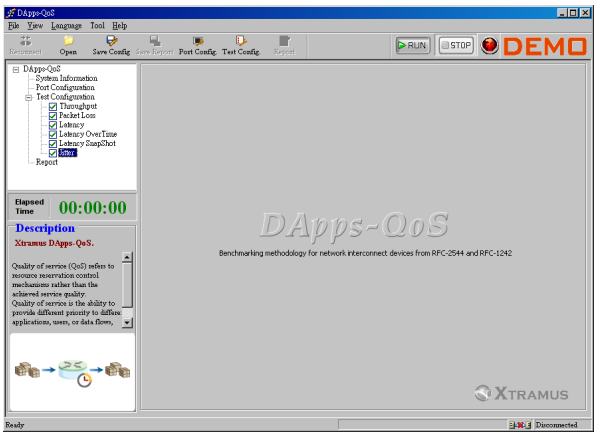


- Click **Start** → **Programs** → **Xtramus** → **DApps-QoS**.

- Double-click DApps-QoS icon located on your PC's desktop.

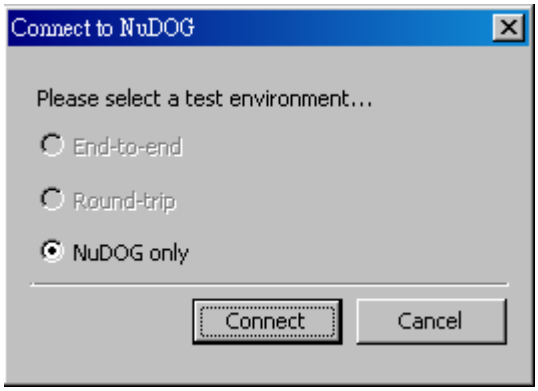
DApps-QoS Demo Mode

If your PC is not connected with NuDOG-301C/NuDOG-101T, you can still run DApps-QoS under Demo Mode. Almost all DApps-QoS's functions are available under Demo Mode. However, please note that **Demo Mode is for system demo purposes only**, and does not serve any testing purposes at all.



Preliminary

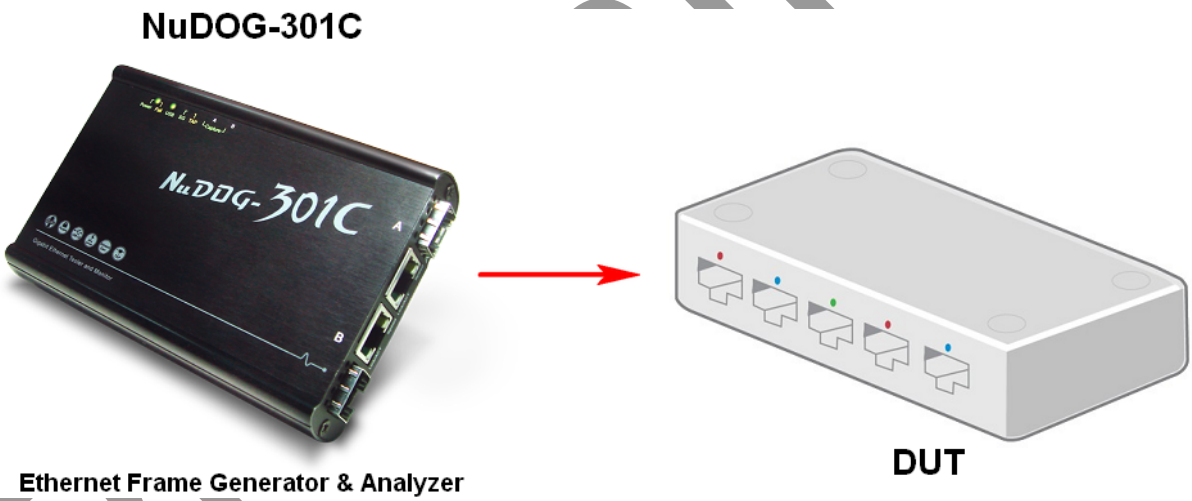
6.2. DApps-QoS Test Modes & Hardware Installation Examples



After starting DApps-QoS as mentioned in the above section, a "**Connect to NuDOG**" window will pop up. DApps-QoS supports the test **NuDOG Only Mode**. Please see the section down below for more information and hardware installation examples regarding to these test modes.

The figure down below illustrates connecting DUT and NuDOG-301C. You can connect NuDOG-101T and NuDOG-801 with DUT in the same manner.

NuDOG Only Mode

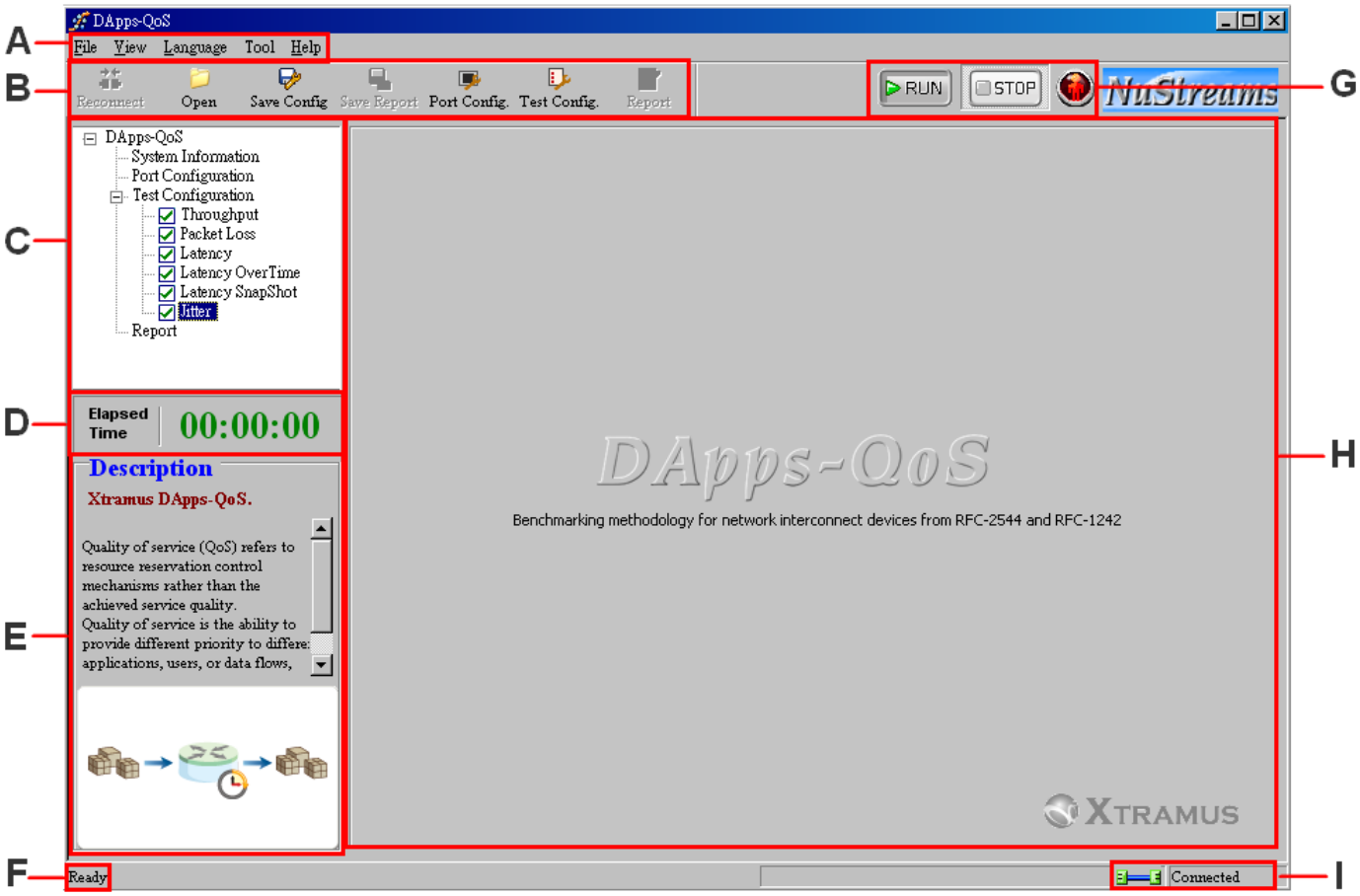


Under "NuDOG Only" mode, DUT is connected to NuDOG-301C/NuDOG-101T, which generates packets and sends them to the DUT for testing.

Note: The testing mode End-to-end and Round trip is not available for DApps-QoS.

Preliminary

6.3. DApps-QoS Overview



DApps-QoS Functions Overview		
A	**Menu Bar**	The **Menu Bar** allows you to make settings about test criteria, load/save settings you've made, and change language displayed.
B	**Tool Bar**	The **Tool Bar** contains buttons that allow you to reconnect your PC to NuDOG-301C, load/save test settings, make test/port configurations, and view/save test reports.
C	**System Info/Configuration List**	By clicking the **System Info/Configuration List**, you can view system information, making test configurations, or view test reports on right side **Main Display Screen**.
D	**Elapsed Time**	The **Elapsed Time** field displays the elapsed time during test.
E	**Description**	The **Description** field display brief descriptions regarding to tests.
F	**Status Bar**	The **Status Bar** shows the running status of DApps-QoS.
G	**Control Buttons/Test Running Status Icon**	The **Control Buttons** allow you to start/stop tests, and the **Test Running Status Icon** indicates if there's a test running.
H	**Main Display Screen**	You can make detail configurations and view real-time testing diagrams on the **Main Display Screen**.
I	**System Connection Status**	This icon shows the connection status between your PC and NuDOG-301C/ NuDOG-801/NuDOG-101T.

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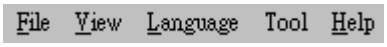
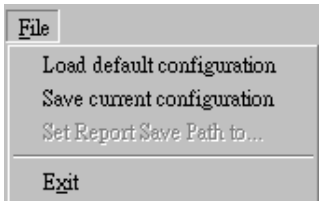
7. DApps-QoS Functions

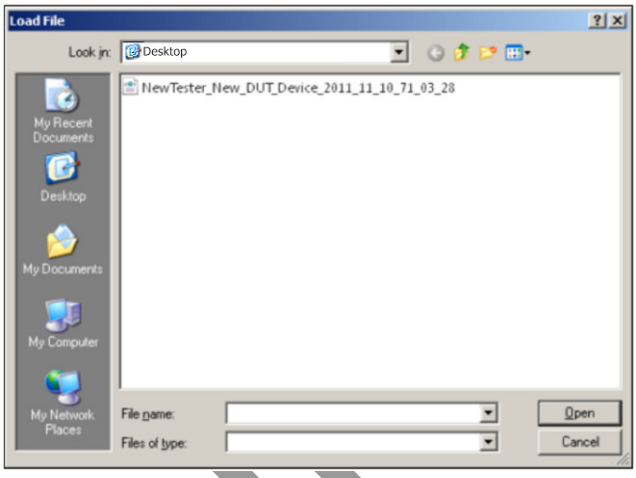
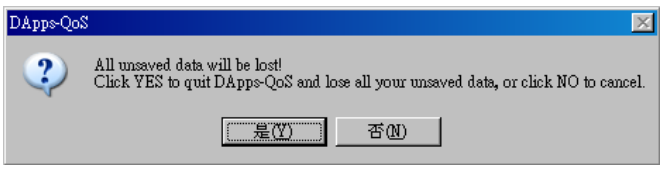
7.1. Menu Bar



DApps-QoS **Menu Bar** includes configuration options such as **File**, **View**, **Language**, **Tool**, and **Help**. Please refer to the sections down below for detail information regarding to each configuration option.

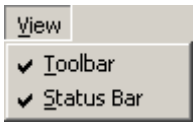
7.1.1. File



File	
Load default configuration	 If you have a previously saved configuration setting file stored in your PC, you can load it and apply all the setting you've made by choosing "**File → Load default configuration**" from the **Menu Bar**. All configuration files are saved in the format of "**∗.xml**".
Save current configuration	The **Save current configuration** function on the **Menu Bar** allow you to save the settings you've made or the test results. To save the settings you've made, choose **"Save current configuration"** from the **Menu Bar** before performing any tests, and choose the file path where you would like to save the configuration file. Configuration files are saved in the format of "***.xml**".
Set Report Save path to…	To save the test results, choose **"File → Set Report Save Path to…"** from the **Menu Bar** after performing test, and choose the file path where you would like to save your test results. Test results and related statistic are available and can be viewed with the "**∗.xls**" file you saved this way. Please note that you need Microsoft Excel® to view "**∗.xls**" file.
Exit	 A prompt pop-up window will ask if you are sure to exit DApps-QoS. Click **YES** to exit DApps-QoS, or click **NO** to cancel.

Preliminary

7.1.2. View



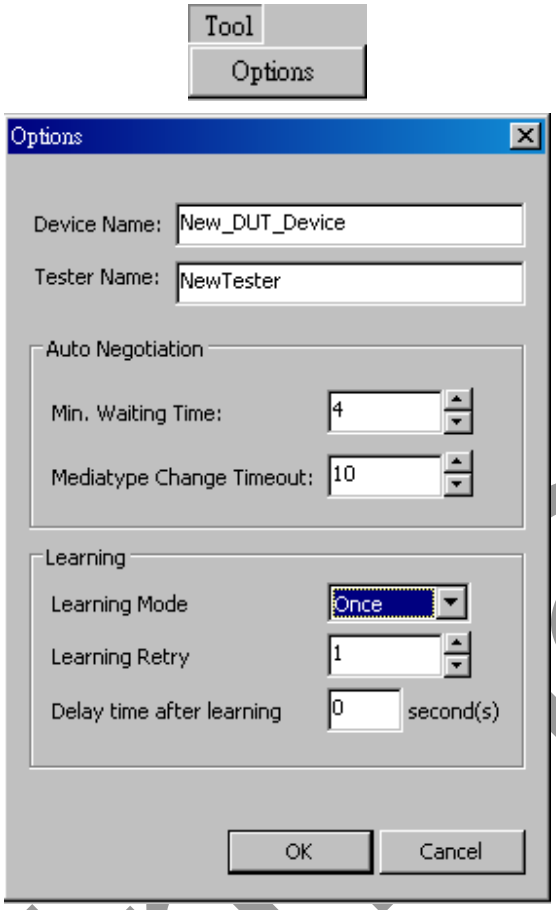
View	
Tool Bar/Status Bar	You can choose to show or hide DApps-QoS **Tool Bar** or **Status Bar** here.

7.1.3. Language

Language	
English	The NuApps-QoS-RM's UI illustration language is based on English.

Preliminary

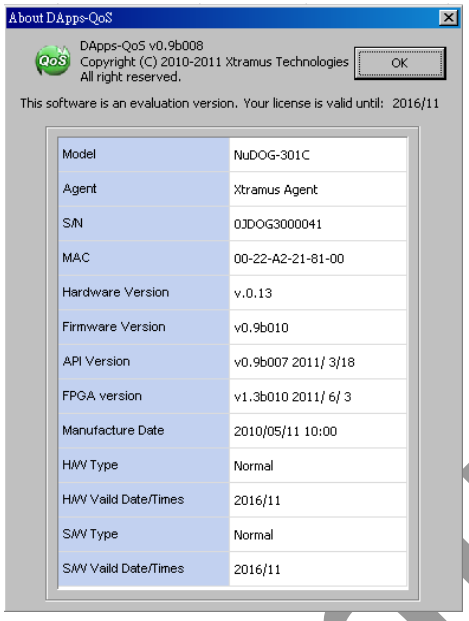
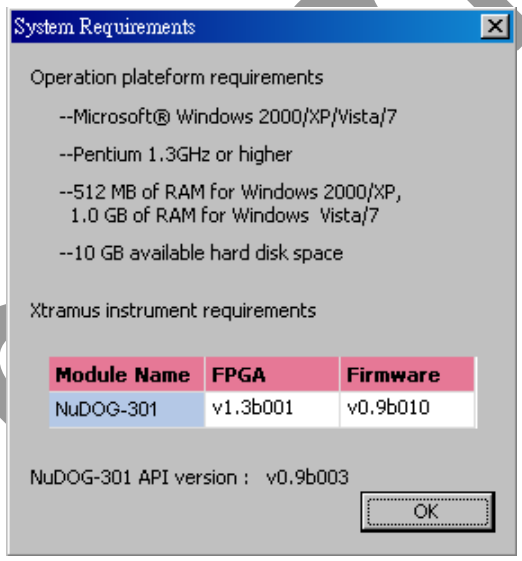
7.1.4. Tool



Tool		
Device Name	You can name your DUT in this field, the default name is New_DUT_Device.	
Tester Name	You can name your Tester in this field. The default name is New Tester.	
Auto Negotiation	**Min. Waiting Time**	The minimum waiting time (in seconds) for auto-negotiation.
	Media Type Change Timeout	If the time (in seconds) NuApps-QoS-RM spent for auto-negotiation exceeds the time you set here, the test will stop.
Learning	**Learning Mode**	There's 3 options for Learning Mode, choose "Never" to block learning function, choose "Once" to learn at the first test trial, and choose "every trial" to learn at every test trial.
	Learning Retry	The value set here will be the number of learning packets that will be sent through the ports chosen to be learned for building address table.
	Delay time after learning	You can set the period of time to delay after finishing with learning function.

Preliminary

7.1.5. Help

Help	
About DApps-QoS	 An "**About**" window will pop up and show detailed system information. ➢ **OK:** Click this button to exit the "**About DApps-QoS**" pop-up window.
System Requirements	 A "**System Requirements**" window will pop up and show the requirements for your PC and the FPGA/Firmware of the module. ➢ **OK:** Click this button to exit the "**System Requirements**" pop-up window.
Xtramus Web	Open your default web browser and access Xtramus Website (www.xtramus.com).

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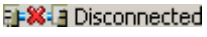
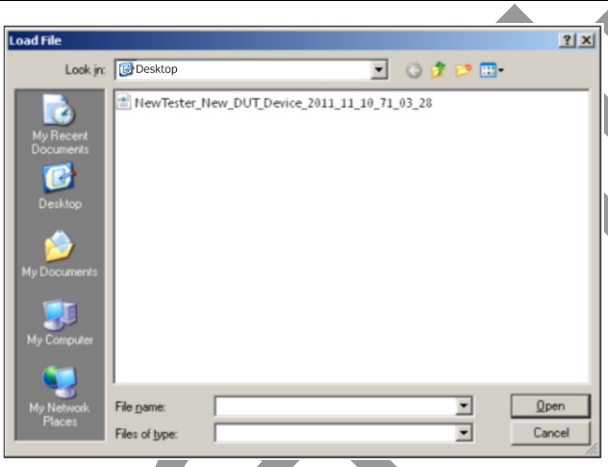
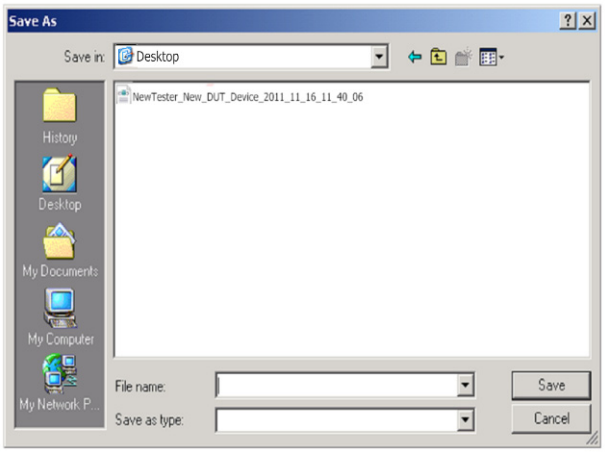
7.2. Tool Bar

The **Tool Bar** contains buttons that allow you to reconnect NuDOG-301C/NuDOG-101T, open/save configuration files, module port configuration, test configuration, and view test reports. Please refer to the section down below for more detail descriptions regarding to **Quick Launch Buttons**.

Reconnect	
	If the USB connection between your PC and NuDOG-301C/NuDOG-101T is down, a "**Disconnected**" icon  will be shown in "**System Connection Status**". Press **Reconnect** button to re-establish the connection between your PC and NuDOG-301C /NuDOG-101T. If the connection has been established successfully, a message window will pop up, and the "**System Connection Status**" will be shown as "**Connected**"

Open		
		If you have a previously saved configuration setting file stored in your PC, you can load it and apply all the setting you've made by clicking the "**Open**" button on the **Tool Bar**. All configuration files are saved in the format of "**∗.xml**".

Save Config		
		You can save the current test settings with the **Save Config** button on the **Quick Launch Buttons**. Configuration files are saved in the format of "***.xml**", and are named with **Tester Name**, **DUT Name**, and the date/time when files are created.

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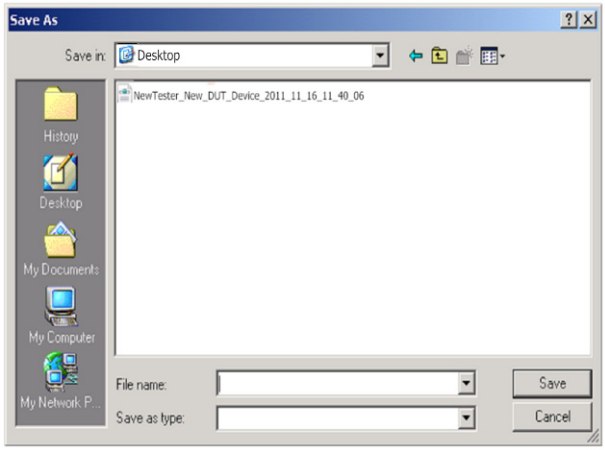
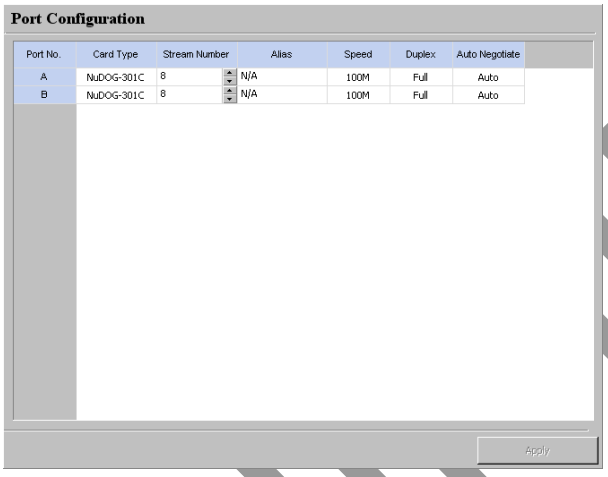
Save Report



You can save the test report with the **Save Report** button on the **Quick Launch Buttons**.

Reports are saved in the format of "***.xls**", and are named with **Tester Name**, **DUT Name**, and the date/time when files are created.

Port Configuration

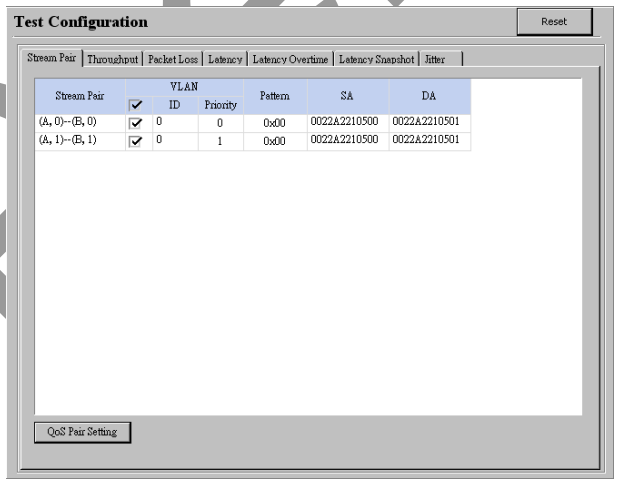


By clicking the **Port Config** button, the **Port Configuration** screen will be shown on the **Main Display Screen** located on the right side of DApps-QoS' main window, allowing you to make settings for the module ports.

Settings such as port transmitting rate and auto-negotiation are available and can be set here.

For more detail description about **Port Configuration**, please refer to **6.8. Port Configuration**.

Test Configuration



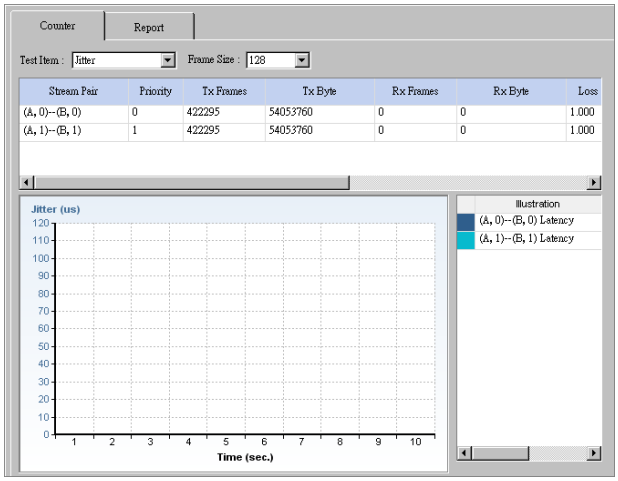
By clicking the **Test Config** button, the **Test Configuration** screen will be shown on the **Main Display Screen** located on the right side of DApps-
QoS' main window, allowing you to make test settings.

You can set 6 different test modes here, including **Throughput**, **Packet Loss**, **Latency**, **Latency Overtime**, **Latency Snapshot**, and **Jitter**.

For more detail description about **Port Configuration**, please refer to **6.9. Test Configuration**.

Preliminary

Report



The **Report** button allows you to view test results, charts, and statistics on the **Main Display Screen** located on the right side of DApps-QoS' main window.

For more detail description about **Report**, please refer to **6.10. Report**.

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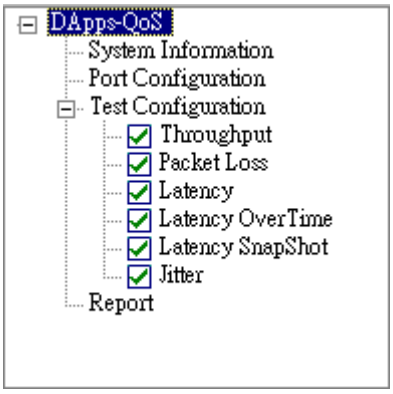
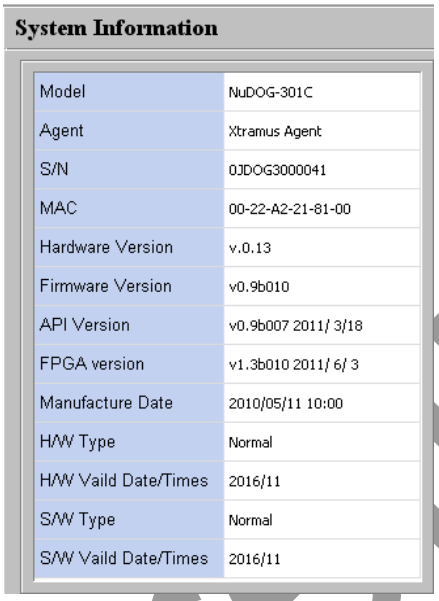
7.3. System Info/Configuration List



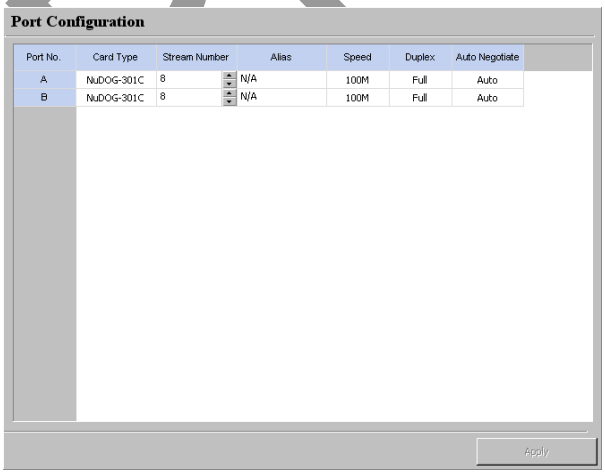
The **System Info/Configuration List** allows you to view system information, making port/test configurations, and check test reports on the **Main Display Screen**.

System Information



By clicking the **System Information** on the **System Info/Configuration List**, the **System Information** screen will be shown on the **Main Display Screen** located on the right side of DApps-QoS' main window.

Port Configuration



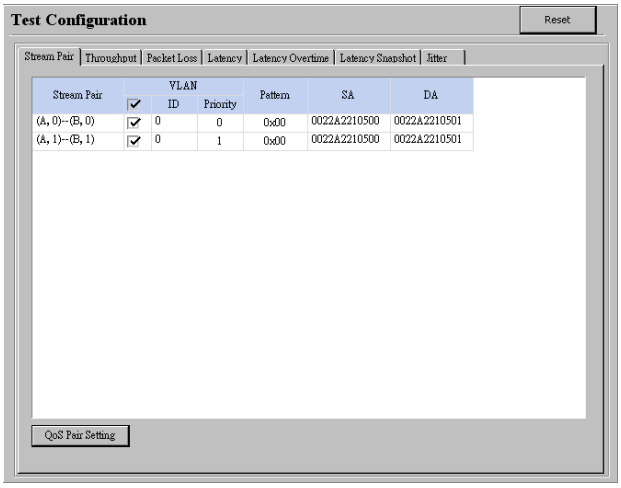
By clicking the **Port Configuration** on the **System Info/Configuration List**, the **Port Configuration** screen will be shown on the **Main Display Screen** located on the right side of DApps-QoS' main window, allowing you to make settings for NuDOG-301C/NuDOG-801 /NuDOG-101T ports.

Settings such as port transmitting rate and auto-negotiation are available and can be set here.

For more detail description about **Port Configuration**, please refer to **6.8. Port Configuration**.

Preliminary

Test Configuration

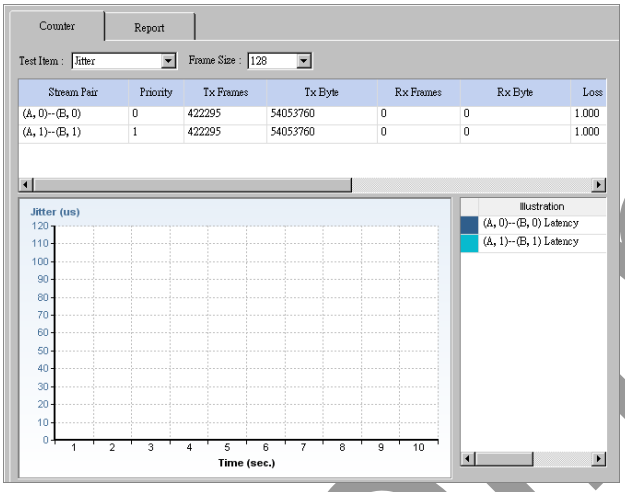


By clicking the **Test Configuration** on the **System Info/Configuration List**, the **Test Configuration** screen will be shown on the **Main Display Screen** located on the right side of DApps-QoS' main window, allowing you to make test settings.

You can set 6 different test modes here, including **Throughput**, **Packet Loss**, **Latency**, **Latency Overtime**, **Latency Snapshot** and **Jitter**.

For more detail description about **Test Configuration**, please refer to **6.9. Test Configuration**.

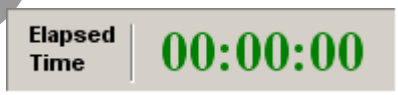
Report



The **Report** on the **System Info/Configuration List** allows you to view test results, charts, and statistics on the **Main Display Screen** located on the right side of DApps-QoS' main window.

For more detail description about **Report**, please refer to **6.10. Report**.

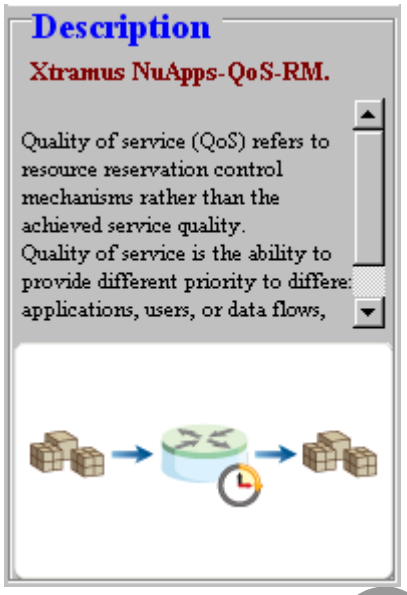
7.4. Elapsed Time



The **Elapsed Time** allows you to know the time spent during tests.

Preliminary

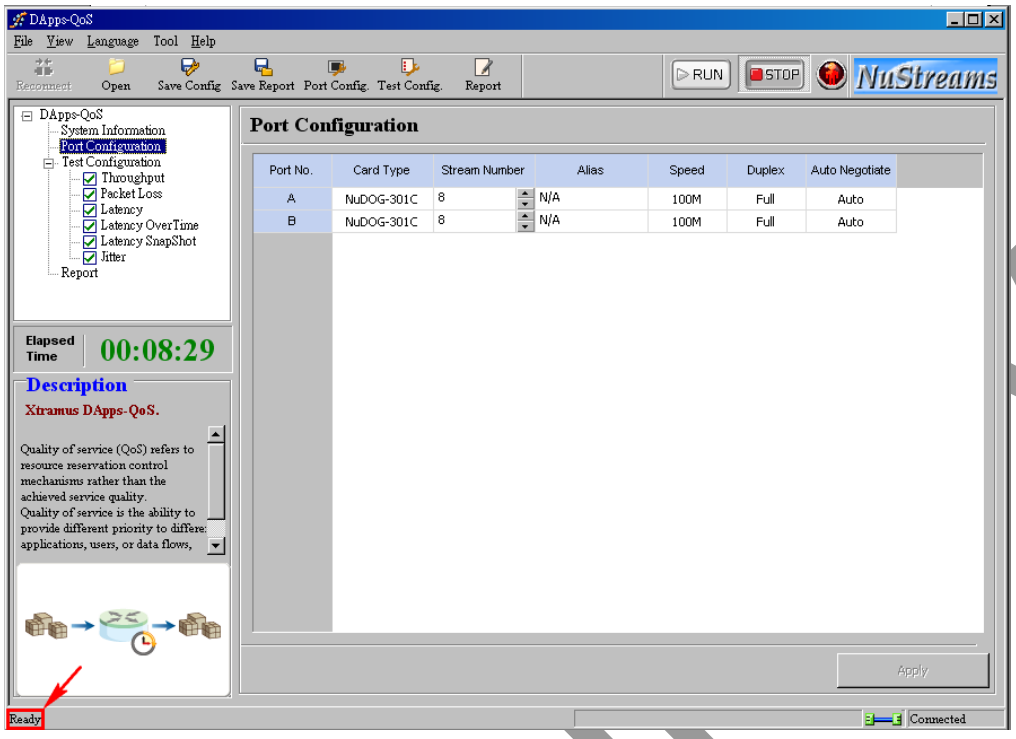
7.5. Description


Description
Xtramus NuApps-QoS-RM.
Quality of service (QoS) refers to resource reservation control mechanisms rather than the achieved service quality.
Quality of service is the ability to provide different priority to differe
applications, users, or data flows,

The Description displays brief descriptions of Quality of service (QoS), Throughput, Packet Loss, Latency, Latency Overtime, Latency Snapshot, Jitter tests.

Preliminary

7.6. Status Bar


DApps-QoS
File View Language Tool Help
Reconnect Open Save Config Save Report Port Config. Test Config. Report
RUN STOP NuStreams
DApps-QoS
System Information
Port Configuration
Test Configuration
Throughput
Packet Loss
Latency
Latency OverTime
Latency SnapShot
Jitter
Report
Port Configuration
Port No. Card Type Stream Number Alias Speed Duplex Auto Negotiate
A NuDOG-301C 8 N/A 100M Full Auto
B NuDOG-301C 8 N/A 100M Full Auto
Elapsed Time 00:08:29
Description
Xtramus DApps-QoS.
Quality of service (QoS) refers to resource reservation control mechanisms rather than the achieved service quality. Quality of service is the ability to provide different priority to differe applications, users, or data flows,
Apply
Ready
Connected

The **Status Bar** shows the running status of DApps-QoS.

7.7. Control Buttons/Test Running Status Icon

The **Control Buttons** allow you to start/stop tests, and the **Test Running Status Icon** indicates if there's a test running.

Control Buttons	
	Start test
	Stop test

Test Running Status Icon	
	No Test is running
	Test is running

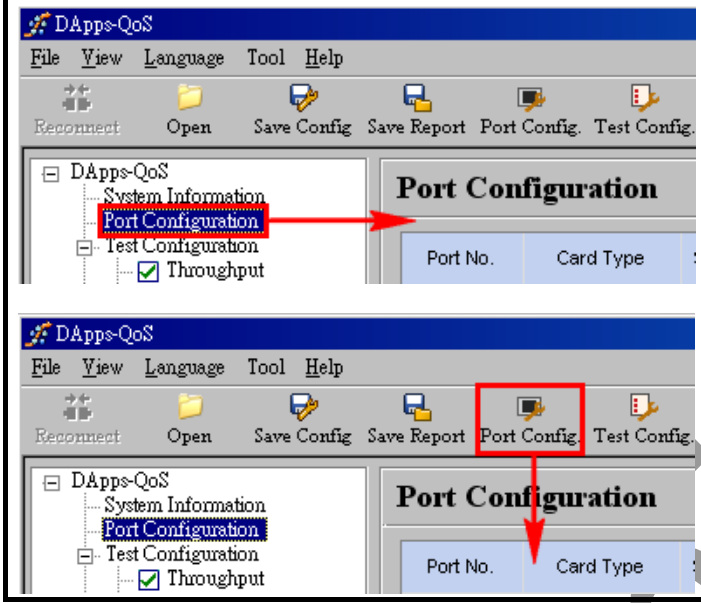
Preliminary

7.8. Port Configuration

Settings such as port transmitting rate and auto-negotiation are available and can be configured on the **Port Configuration** displayed on the **Main Display Screen**.

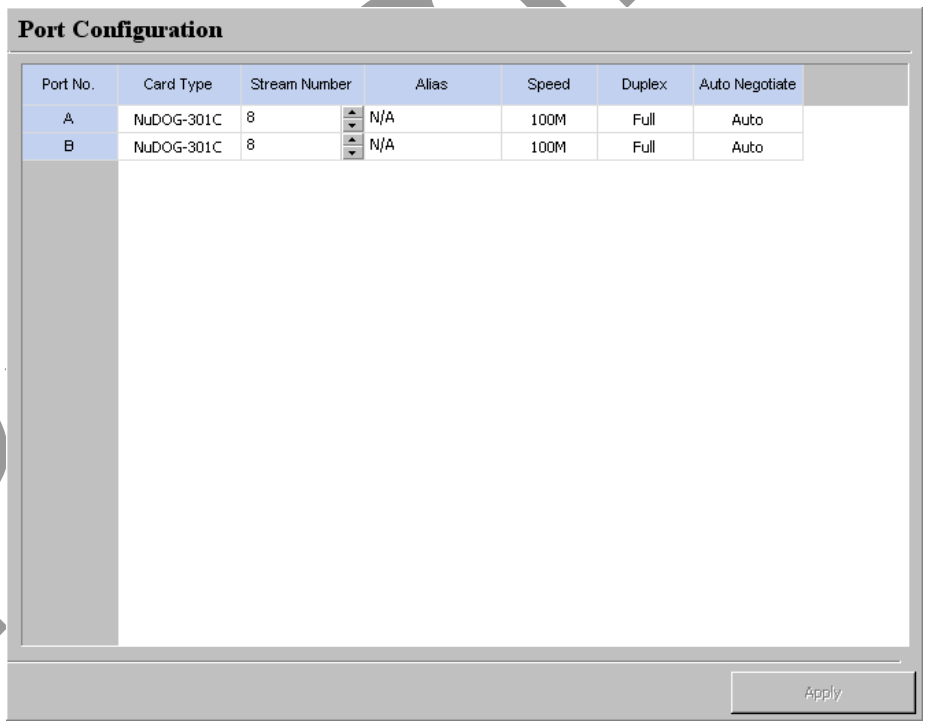
There are two ways to access **Port Config**:

Accessing Port Config



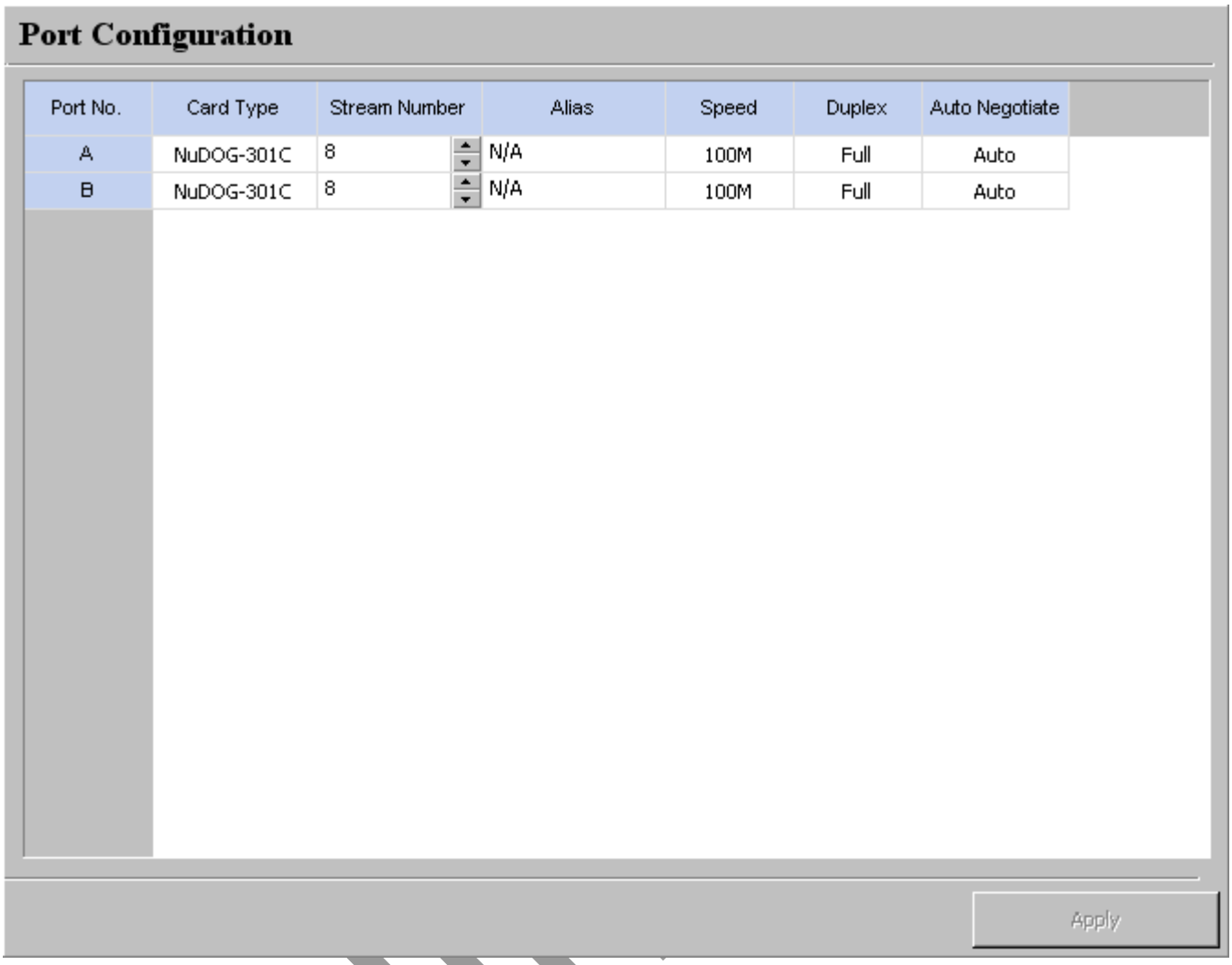
- Click **Port Config** located on **System Info/ Configuration List**

- Click the **Port Config** button located on **Quick Launch Buttons**.


Port Configuration
Port No. Card Type Stream Number Alias Speed Duplex Auto Negotiate
A NuDOG-301C 8 N/A 100M Full Auto
B NuDOG-301C 8 N/A 100M Full Auto
Apply

➢ The **Port Configuration** allows you to view Port No. and Card Type, and also allows you to set Stream Number, Alias, Speed, Duplex and Auto-Negotiate.

Preliminary



- **Port No:** This field lists NuDOG-301C/NuDOG-801/NuDOG-101T Test Port (Port A/B).
- **Card Type:** This field lists the model name of the test device.
- **Stream Number:** The name of the different Stream.
- **Alias:** You can input alias for identifying active ports here in these fields.
- **Speed:** The **Speed** scroll-down menu allows you to set each port's transmitting/receiving rate.
- **Duplex:** You can set the port as Full-Duplex or Half-Duplex with the scroll-down menu. Note that the **Duplex** can only be set when the speed is **10M/100M**.
- **Auto Negotiate:** By clicking the scroll-down menu, you can set the transmitting mode to **Auto** (with auto-negotiation) or **Force** (without auto-negotiation).

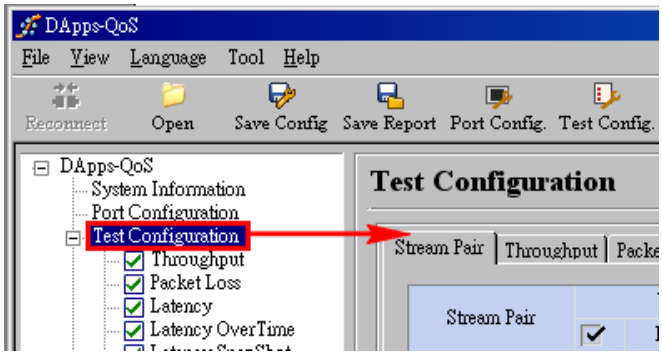
Preli

7.9. Test Configuration

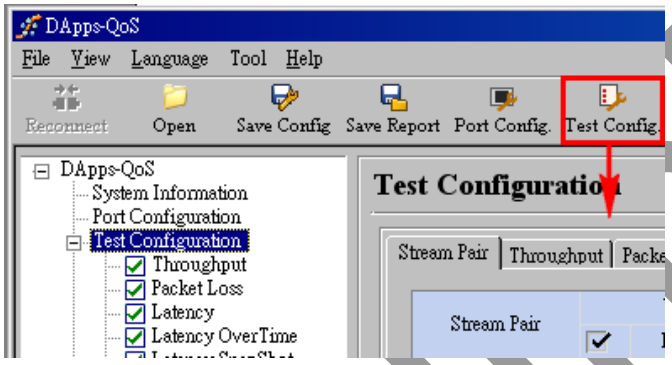
7 different set of settings, including **Stream Pair**, **Throughput**, **Packet Loss**, **Latency**, **Latency Overtime**, **Latency Snapshot**, and **Jitter**, can be configured on the **Test Configuration** displayed on the **Main Display Screen.**

There are two ways to access **Test Config**:

Accessing Test Config

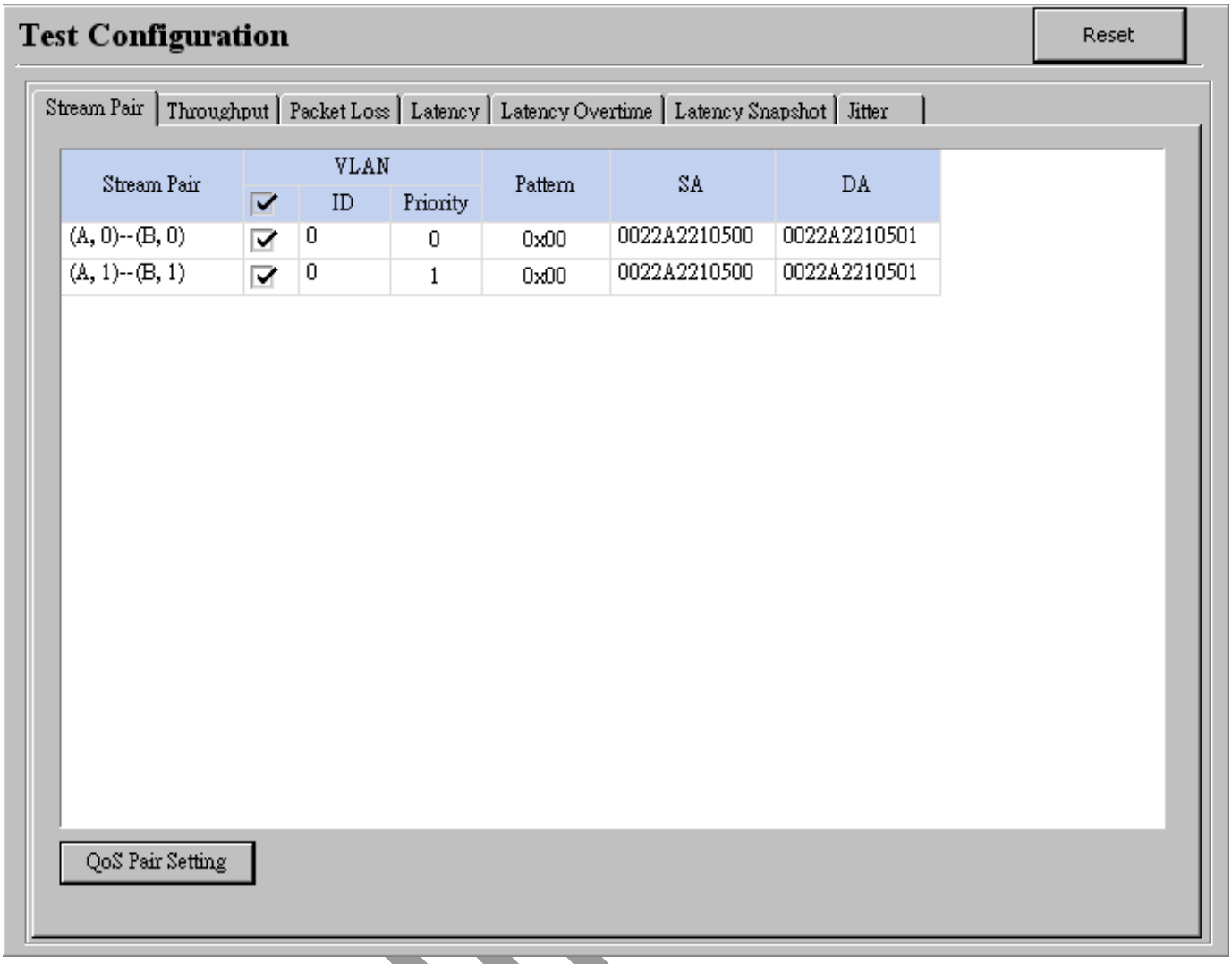


- Click **Test Config** located on **System Info/ Configuration List**



- Click the **Test Config** button located on **Quick Launch Buttons**.

Preliminary



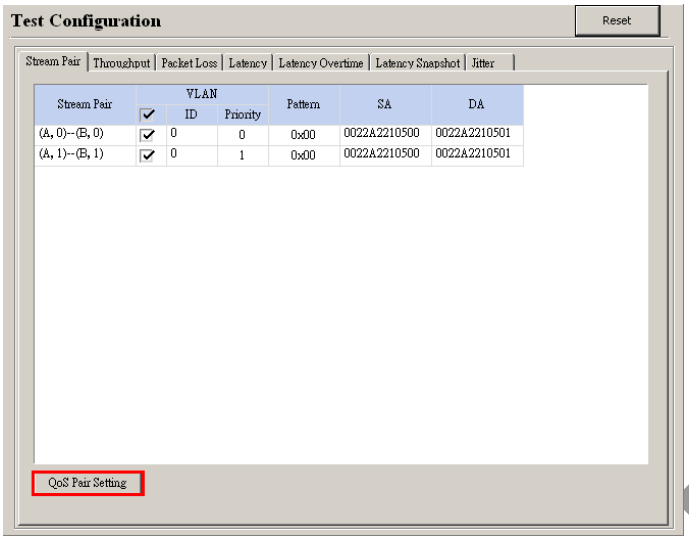
The **Test Configuration** contains 7 different sets of settings: **Stream Pair**, **Throughput**, **Packet Loss, Latency, Latency Overtime, Latency Snapshot** and **Jitter**, which can be accessed by clicking the test you would like to perform on **System Info/Configuration List** or the tab menu located on **Test Configuration** screen.

Preli

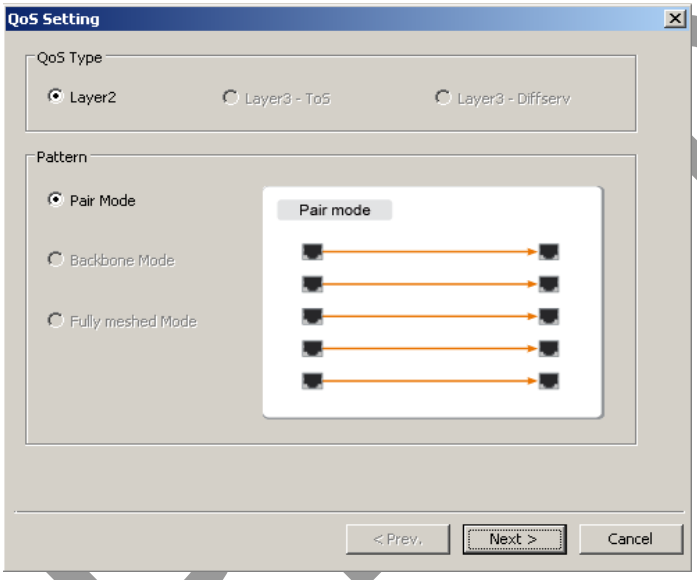
Assigning Source Port and Destination Port for DApps-QoS

Before making any test configurations on the **Test Configuration** screen, you have to assign the Source Port and Destination Port for DApps-QoS first. Please see the description down below for more details.

Assigning Source Port and Destination Port for DApps-QoS



To assign Source Port and Destination Port, click the **QoS Pair Setting** button on the left down side of **Test Configuration** interface.



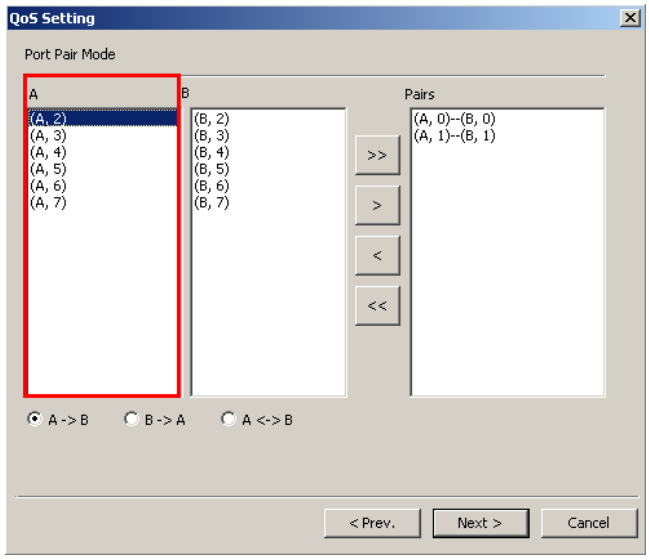
A **QoS Setting** window will pop up showing the **QoS Type** and **Pattern** to be set.

After finished with the settings, please press the **Next >** button for the next step.

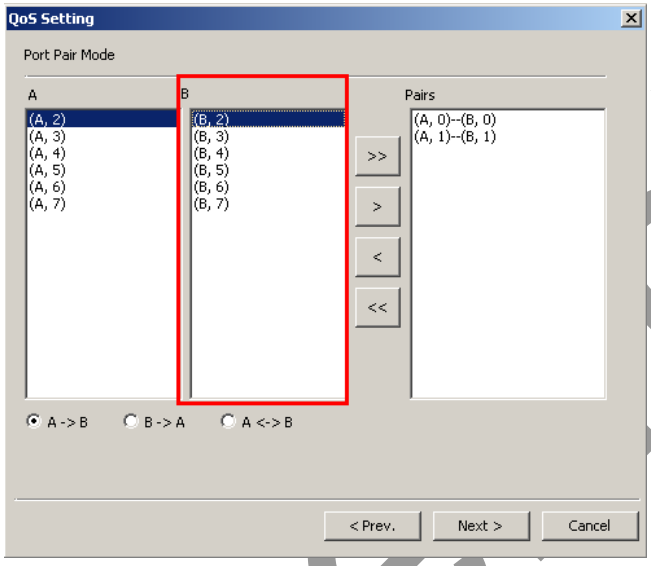
Note: Currently only the **Layer2** option from **QoS Type** and **Pair Mode** option from **Pattern** is available.

Preliminary

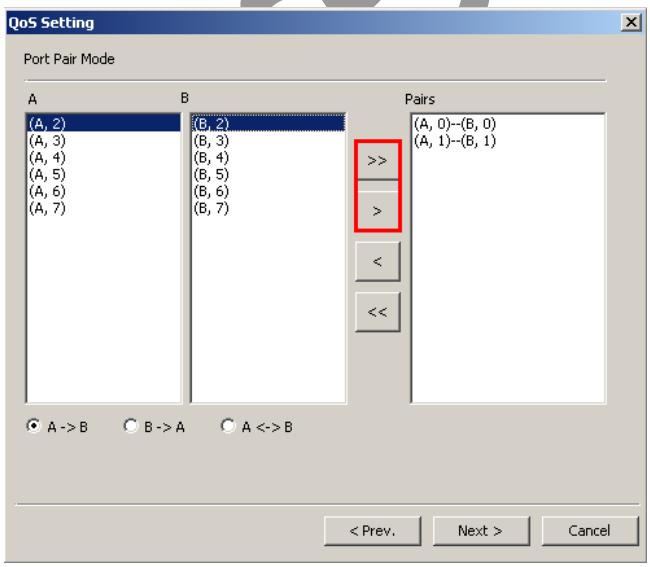
Assigning Source Port and Destination Port for DApps-QoS



1. Choose a port that will serve as the source port from the **A** field.



2. Choose a port that will serve as the destination port from the **B** field.

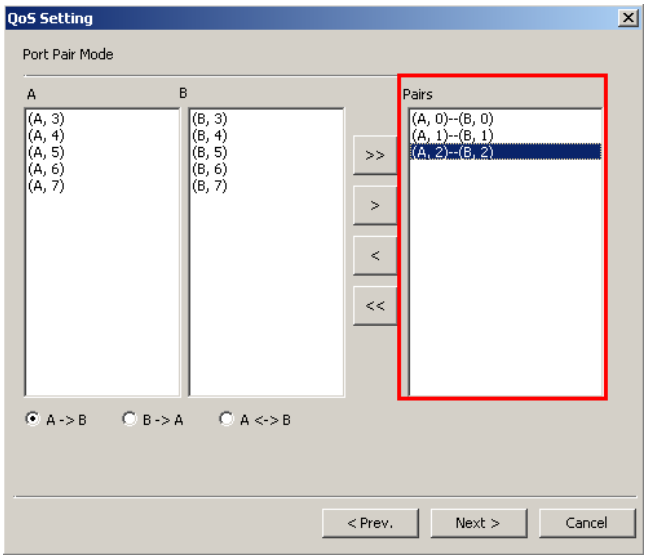


3. Click the > button to add the port pair you set in step1-2.

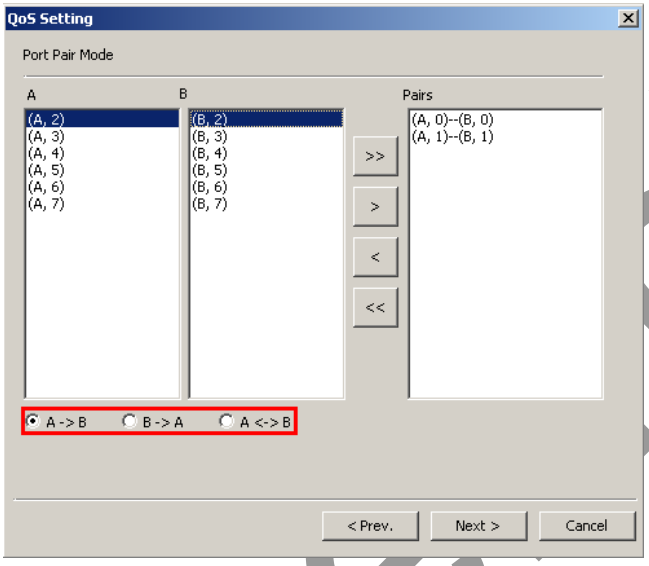
Note: If you click the >> button, the system will automatically match all the available ports into pair.

Preliminary

Assigning Source Port and Destination Port for DApps-QoS

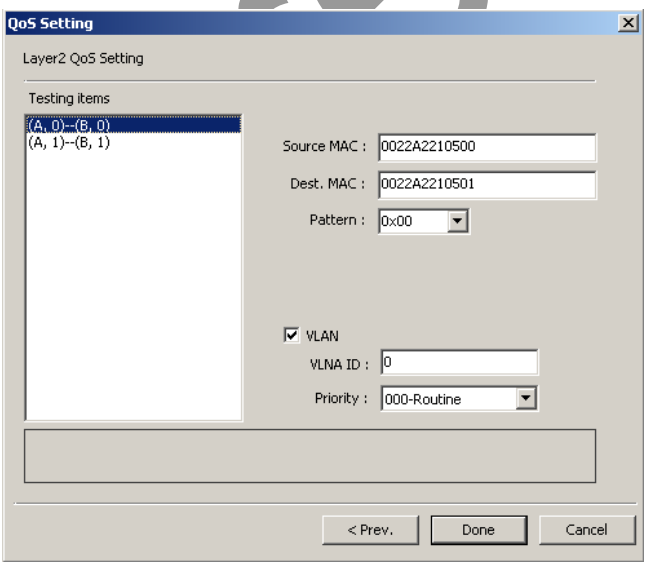


4. The port pair will be added to the **Pairs** field. You can remove the selected port pair by clicking the < button, or remove all port pairs by clicking the << button.



5. Choose the **direction of source port to destination port**. There are three options: **A→B**, **B→A** and **A←→B**.

After finished with the settings, please press the **Next >** button for the next step.



The **Testing items** field on the left side will show the chosen pairs from **Pairs** field.

You may click and choose the pair on the **Testing items** field, and input a new MAC address on the **Source MAC** / **Dest. MAC**. Also, you may set the pattern by scrolling down for the options on the **Pattern** field.

You may activate the **VLAN** function by clicking the check box and set the VID on the VLAN ID field. You may also set the priority by scrolling down for the options on the **Priority** field.

Press the **Done** button to apply the settings, or the **Cancel** button to cancel the settings made so far.

Preliminary

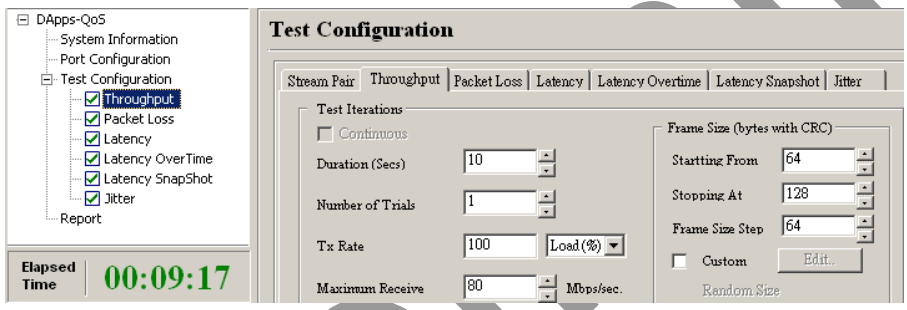
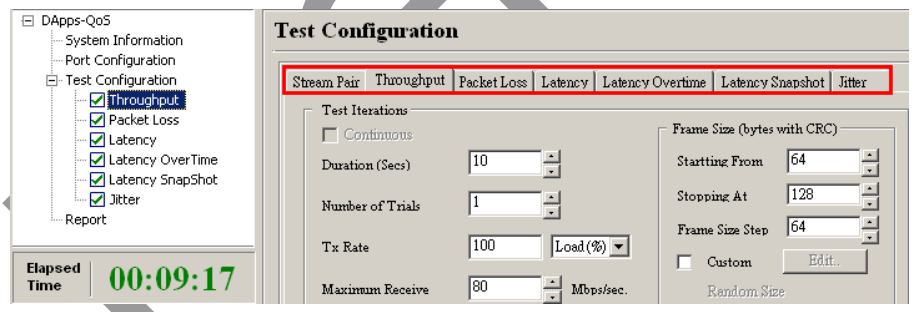
7.9.1. Test Configuration Overview

NuApps-QoS-RM supports the following tests:

Test	Description
Throughput	Determines the DUT's maximum capable throughput rate without dropping any packets.
Packet Loss	Measures the percentage of packets that are not forwarded due to the lack of resource.
Latency	Measures the time it takes for the DUT to forward a packet.
Latency Overtime	Measures the time it takes for the DUT to forward a packet in a time interval.
Latency Snapshot	Measures the packet that DUT forwards in a determined time gap.
Jitter	Measures the undesired deviation from true periodicity of an assumed periodic signal.

To start performing tests with NuApps-QoS-RM, please check the check box in front of the test you would like to perform first. Unchecked tests will not be performed, and cannot access their report as well during or after the tests.

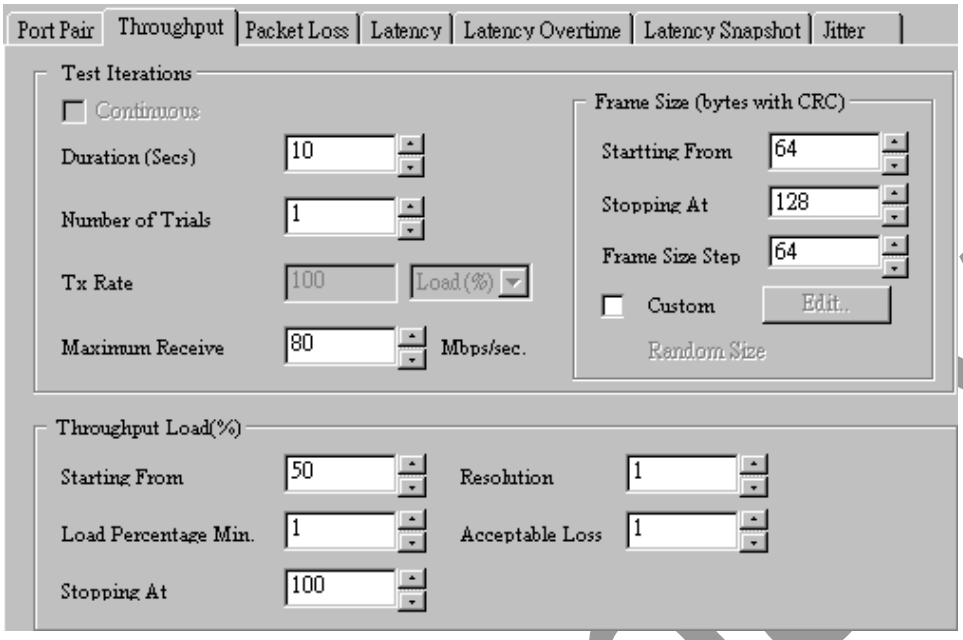
You can access setting options for the tests you would like to perform by:

Accessing Test Setting Pages	
	Click the test you would like to configure located on **System Info/Configuration List**.
	Click the test you would like to configure located on the test tab menu.

For more detailed setting options regarding to **Throughput**, **Packet Loss**, **Latency**, **Latency Overtime**, **Latency Snapshot** and **Jitter**, please refer to the sections down below.

Preliminary

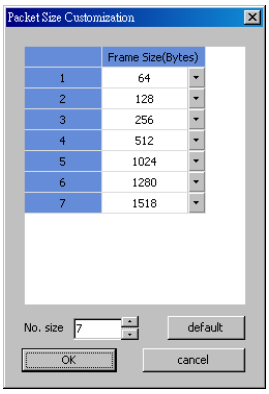
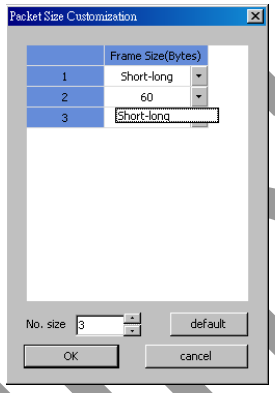
7.9.2. Throughput Test



Throughput test determines the DUT's maximum capable throughput rate without dropping any packets. The Throughput configuration page allows you to customize the test duration, packet length, packet transmission rate (%) for the desired testing environment.

Test Iterations	
Continuous	Click to activate continuous testing with the same settings.
Duration(Secs)	The duration of time (in seconds) for the test. The range for the testing time is **1~5000**.
Number of Trials	The number of times of the test. The range for the number of times of the test is **1~100**.
Maximum Receive	The maximum limit to receive packets in Mbps/sec.

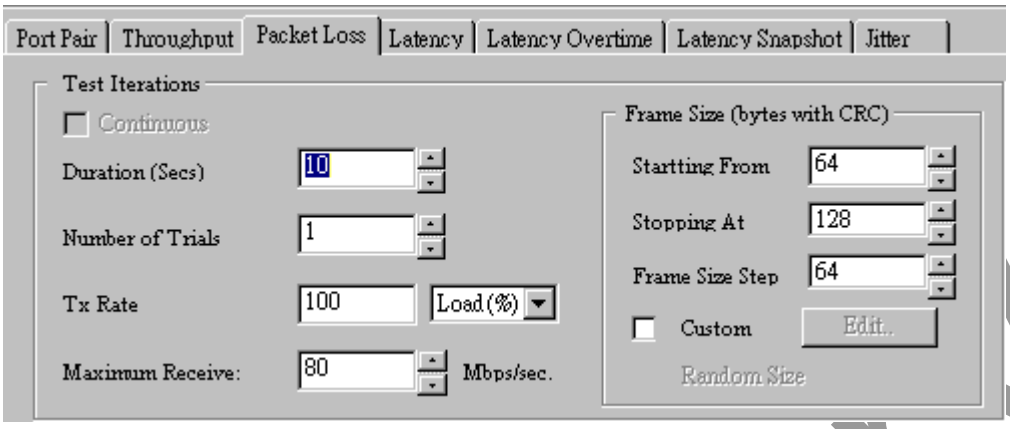
Preliminary

Frame Size (bytes with CRC)		
Starting from/Stopping at	The starting/ending size of the transmitted packet. The range of the **Starting from/Stopping at** field is **60~2032**.	
Frame Size Step	The frame size will increase in arithmetic progression fashion, while the value you set here will serve as its difference. The range of the **Frame Size Step** is **60~2032**.	
Custom		You can customize the size of each transmitted packet manually by enabling **Custom** function and clicking the **Edit** button. A **Packet Size Customization** window will pop up. You can customize the Frame Size on this window, or reset all custom settings by clicking "**Default**" button. Click "OK" button to save the settings or "Cancel" to exit the window without saving the settings.
		By clicking on the button, you will be allowed to choose between **Short-long** function or customize the size of each packet. If you choose the **Short-long** function, than during the selected step the packet will be sent by a cycle of 64 and 1518 bytes.
Packet Payload	This scroll-down menu allows you to set packet contents to **Random**, **Increase**, **0x55AA**, **0x00FF**, **All 1** or **All 0**.	

Throughput Load (%)	
Starting from/Stopping at	The starting/ending network traffic rate (%) of the test.
Load Percentage Min.	The minimum acceptable network traffic rate (%) of the test.
Resolution	The test will stop when the difference between the current network traffic rate and the last network traffic rate is smaller than the value you set here.
Acceptable Loss	The acceptable rate of packet loss during the test.

Preliminary

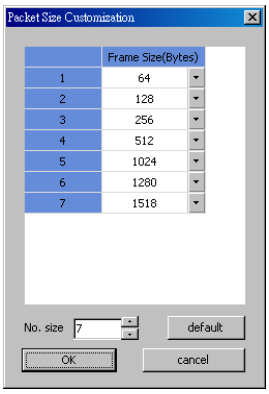
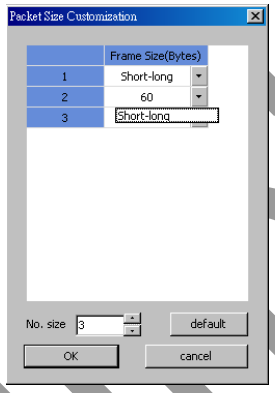
7.9.3. Packet Loss Test



Packet Loss test measures the percentage of packets that are not forwarded (therefore, lost) due to the lack of resource. The loading and testing time can be customized to simulate real-world scenario; thus, giving the user a clear view of DUT's performance limits under different loading environments.

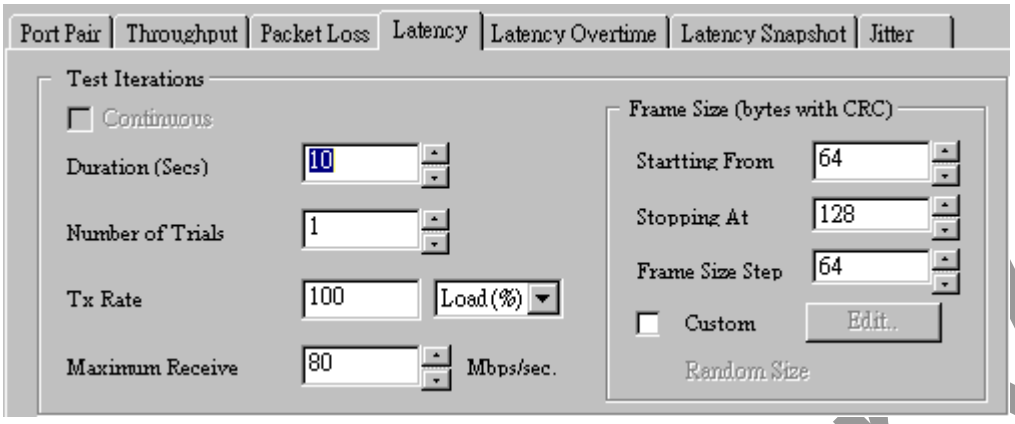
Test Iterations	
Continuous	Click to activate continuous testing with the same settings.
Duration (Secs)	The duration of time (in seconds) for the test. The range for the testing time is **1~5000**.
Number of Trials	The number of times of the test. The range for the number of times of the test is **1~100**.
Tx Rate	The rate of packet transfer. You can also set the load unit in percentage or Mbps here.
Maximum Receive	The maximum limit to receive packets in Mbps/sec.

Preliminary

Frame Size (bytes with CRC)		
Starting from/Stopping at	The starting/ending size of the transmitted packet. The range of the **Starting from/Stopping at** field is **60~2032**.	
Frame Size Step	The frame size will increase in arithmetic progression fashion, while the value you set here will serve as its difference. The range of the **Frame Size Step** is **60~2032**.	
Custom		You can customize the size of each transmitted packet manually by enabling **Custom** function and clicking the **Edit** button. A **Packet Size Customization** window will pop up. You can customize the Frame Size on this window, or reset all custom settings by clicking "**Default**" button. Click "OK" button to save the settings or "Cancel" to exit the window without saving the settings.
		By clicking on the button, you will be allowed to choose between **Short-long** function or customize the size of each packet. If you choose the **Short-long** function, than during the selected step the packet will be sent by a cycle of 64 and 1518 bytes.
Packet Payload	This scroll-down menu allows you to set packet contents to **Random**, **Increase**, **0x55AA**, **0x00FF**, **All 1** or **All 0**.	

Preliminary

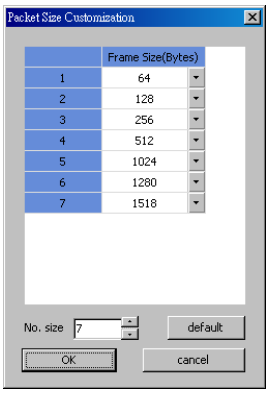
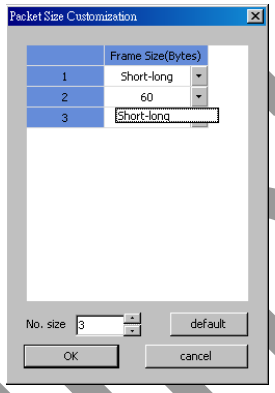
7.9.4. Latency Test



Latency test measures the time it takes for the DUT to forward a packet. The load generated by NuStreams-2000i/600i can be customized with different packet lengths and for specified period of times.

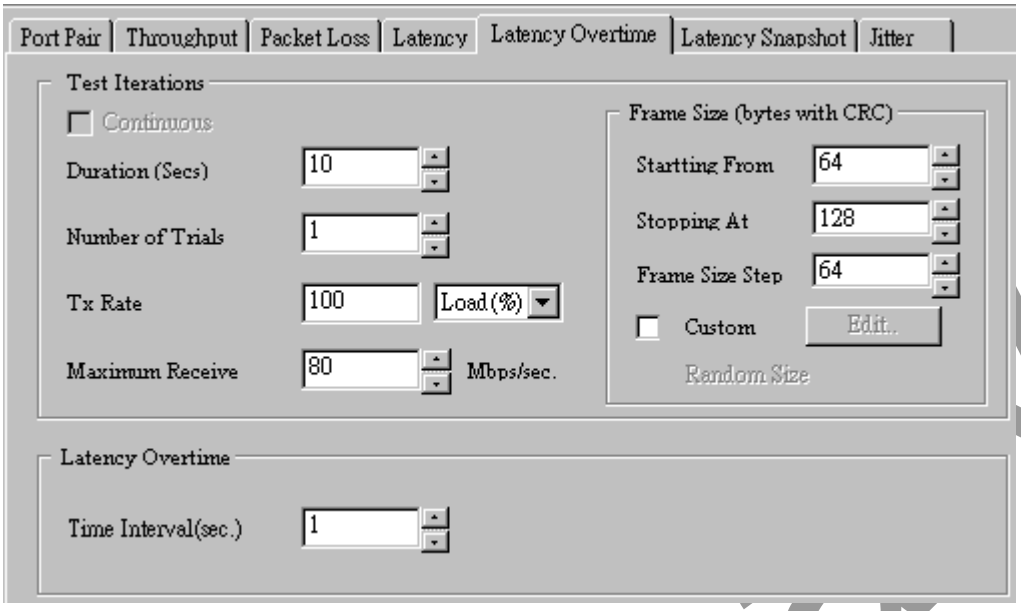
Test Iterations	
Continuous	Click to activate continuous testing with the same settings.
Duration (Secs)	The duration of time (in seconds) for the test. The range for the testing time is **1~5000**.
Number of Trials	The number of times of the test. The range for the number of times of the test is **1~100**.
Tx Rate	The rate of packet transfer. You can also set the load unit in percentage or Mbps here.
Maximum Receive	The maximum limit to receive packets in Mbps/sec.

Preliminary

Frame Size (bytes with CRC)		
Starting from/Stopping at	The starting/ending size of the transmitted packet. The range of the **Starting from/Stopping at** field is **60~2032**.	
Frame Size Step	The frame size will increase in arithmetic progression fashion, while the value you set here will serve as its difference. The range of the **Frame Size Step** is **60~2032**.	
Custom		You can customize the size of each transmitted packet manually by enabling **Custom** function and clicking the **Edit** button. A **Packet Size Customization** window will pop up. You can customize the Frame Size on this window, or reset all custom settings by clicking "**Default**" button. Click "OK" button to save the settings or "Cancel" to exit the window without saving the settings.
		By clicking on the button, you will be allowed to choose between **Short-long** function or customize the size of each packet. If you choose the **Short-long** function, than during the selected step the packet will be sent by a cycle of 64 and 1518 bytes.
Packet Payload	This scroll-down menu allows you to set packet contents to **Random**, **Increase**, **0x55AA**, **0x00FF**, **All 1** or **All 0**.	

Preliminary

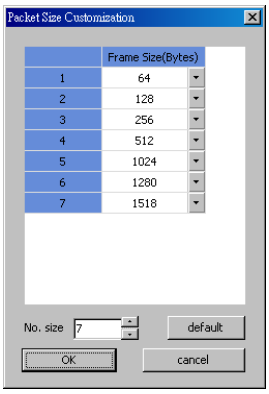
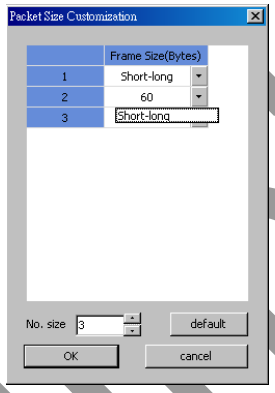
7.9.5. Latency Overtime Test



Latency Overtime test measures the time it takes for the DUT to forward a packet in a time interval. The load generated by NuStreams-2000i/600i can be customized with different packet lengths and for specified period of times.

Test Iterations	
Continuous	Click to activate continuous testing with the same settings.
Duration (Secs)	The duration of time (in seconds) for the test. The range for the testing time is **1~5000**.
Number of Trials	The number of times of the test. The range for the number of times of the test is **1~100**.
Tx Rate	The rate of packet transfer. You can also set the load unit in percentage or Mbps here.
Maximum Receive	The maximum limit to receive packets in Mbps/sec.

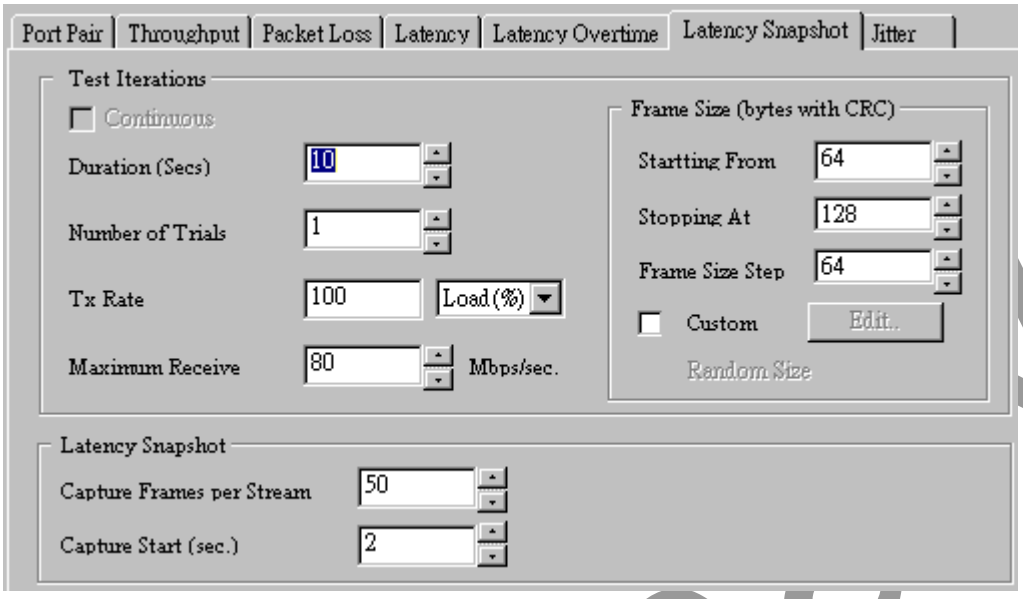
Preliminary

Frame Size (bytes with CRC)		
Starting from/Stopping at	The starting/ending size of the transmitted packet. The range of the **Starting from/Stopping at** field is **60~2032**.	
Frame Size Step	The frame size will increase in arithmetic progression fashion, while the value you set here will serve as its difference. The range of the **Frame Size Step** is **60~2032**.	
Custom		You can customize the size of each transmitted packet manually by enabling **Custom** function and clicking the **Edit** button. A **Packet Size Customization** window will pop up. You can customize the Frame Size on this window, or reset all custom settings by clicking "**Default**" button. Click "OK" button to save the settings or "Cancel" to exit the window without saving the settings.
		By clicking on the button, you will be allowed to choose between **Short-long** function or customize the size of each packet. If you choose the **Short-long** function, than during the selected step the packet will be sent by a cycle of 64 and 1518 bytes.
Packet Payload	This scroll-down menu allows you to set packet contents to **Random**, **Increase**, **0x55AA**, **0x00FF**, **All 1** or **All 0**.	

Latency Overtime	
Time Interval (sec.)	You can set the time interval in this field for measuring the Latency Overtime.

Preliminary

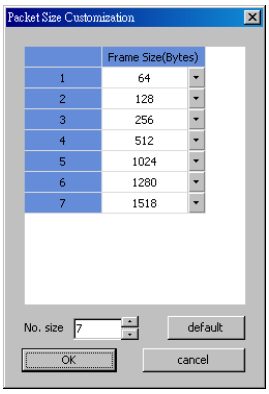
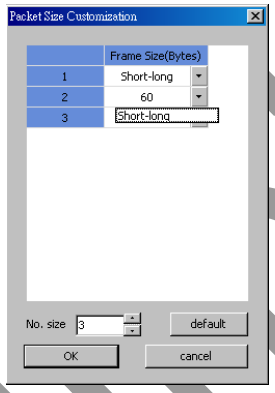
7.9.6. Latency Snapshot Test



Latency Snapshot test measures the latency by capturing a certain quantity of frames per stream from a starting time point. The load generated by NuStreams-2000i/600i can be customized with different packet lengths and for specified period of times.

Test Iterations	
Continuous	Click to activate continuous testing with the same settings.
Duration (Secs)	The duration of time (in seconds) for the test. The range for the testing time is **1~5000**.
Number of Trials	The number of times of the test. The range for the number of times of the test is **1~100**.
Tx Rate	The rate of packet transfer. You can also set the load unit in percentage or Mbps here.
Maximum Receive	The maximum limit to receive packets in Mbps/sec.

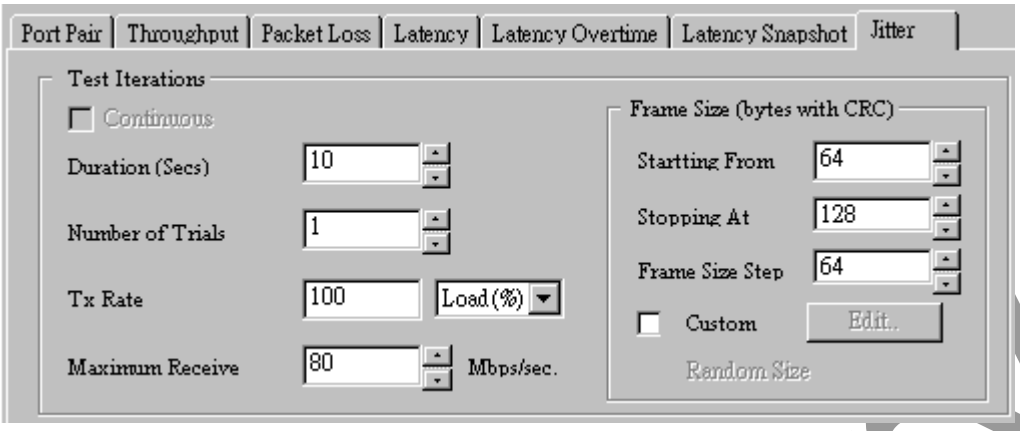
Preliminary

Frame Size (bytes with CRC)		
Starting from/Stopping at	The starting/ending size of the transmitted packet. The range of the **Starting from/Stopping at** field is **60~2032**.	
Frame Size Step	The frame size will increase in arithmetic progression fashion, while the value you set here will serve as its difference. The range of the **Frame Size Step** is **60~2032**.	
Custom		You can customize the size of each transmitted packet manually by enabling **Custom** function and clicking the **Edit** button. A **Packet Size Customization** window will pop up. You can customize the Frame Size on this window, or reset all custom settings by clicking "**Default**" button. Click "OK" button to save the settings or "Cancel" to exit the window without saving the settings.
		By clicking on the button, you will be allowed to choose between **Short-long** function or customize the size of each packet. If you choose the **Short-long** function, than during the selected step the packet will be sent by a cycle of 64 and 1518 bytes.
Packet Payload	This scroll-down menu allows you to set packet contents to **Random**, **Increase**, **0x55AA**, **0x00FF**, **All 1** or **All 0**.	

Latency Snapshot	
Capture frames per streams	Set the quantity of frames you want to capture per stream.
Capture Start (sec.)	Set the time point you want to start to capture the frames per stream.

Preliminary

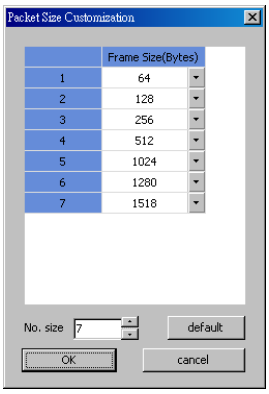
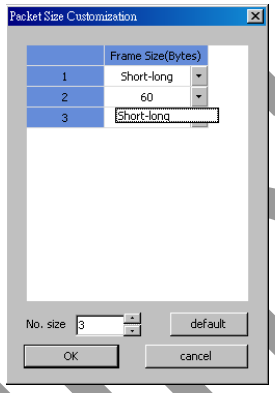
7.9.7. Jitter Test



Jitter test measures the variation of latency during the DUT's test. If the latency doesn't vary, than the Jitter's value will be positive. The load generated by NuStreams-2000i/600i can be customized with different packet lengths and for specified period of times.

Test Iterations	
Continuous	Click to activate continuous testing with the same settings.
Duration (Secs)	The duration of time (in seconds) for the test. The range for the testing time is **1~5000**.
Number of Trials	The number of times of the test. The range for the number of times of the test is **1~100**.
Tx Rate	The rate of packet transfer. You can also set the load unit in percentage or Mbps here.
Maximum Receive	The maximum limit to receive packets in Mbps/sec.

Preliminary

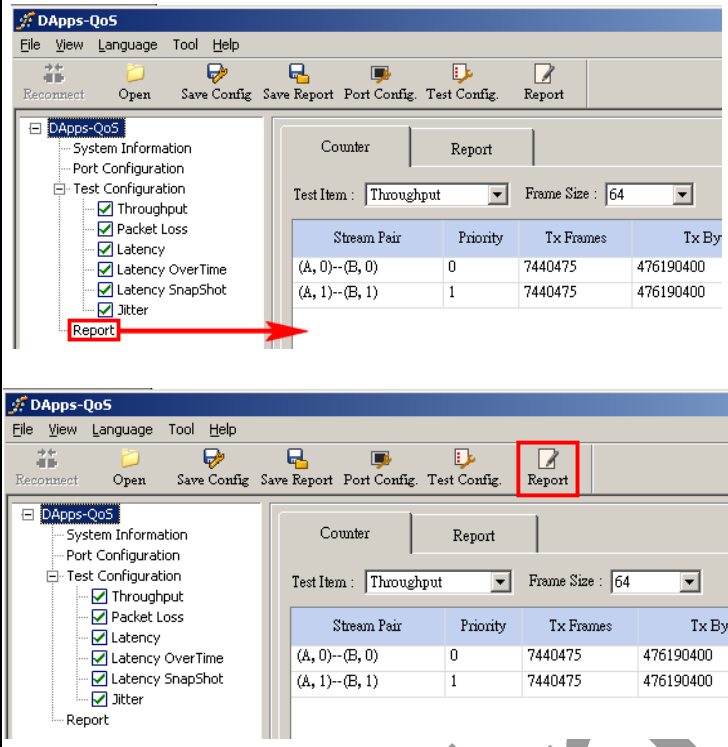
Frame Size (bytes with CRC)		
Starting from/Stopping at	The starting/ending size of the transmitted packet. The range of the **Starting from/Stopping at** field is **60~2032**.	
Frame Size Step	The frame size will increase in arithmetic progression fashion, while the value you set here will serve as its difference. The range of the **Frame Size Step** is **60~2032**.	
Custom		You can customize the size of each transmitted packet manually by enabling **Custom** function and clicking the **Edit** button. A **Packet Size Customization** window will pop up. You can customize the Frame Size on this window, or reset all custom settings by clicking "**Default**" button. Click "OK" button to save the settings or "Cancel" to exit the window without saving the settings.
		By clicking on the button, you will be allowed to choose between **Short-long** function or customize the size of each packet. If you choose the **Short-long** function, than during the selected step the packet will be sent by a cycle of 64 and 1518 bytes.
Packet Payload	This scroll-down menu allows you to set packet contents to **Random**, **Increase**, **0x55AA**, **0x00FF**, **All 1** or **All 0**.	

Preliminary

7.10. Report

Test results, statistics and charts are displayed and can be checked on the **Main Display Screen.** There are two ways to view **Report**:

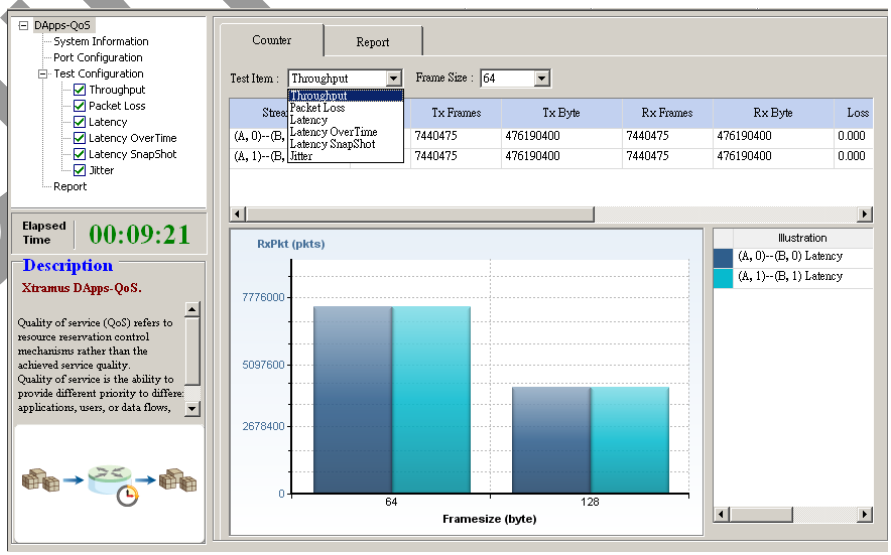
Accessing Report



- Click **Report** located on **System Info/ Configuration List**.

- Click the **Report** button located on **Quick Launch Buttons**.

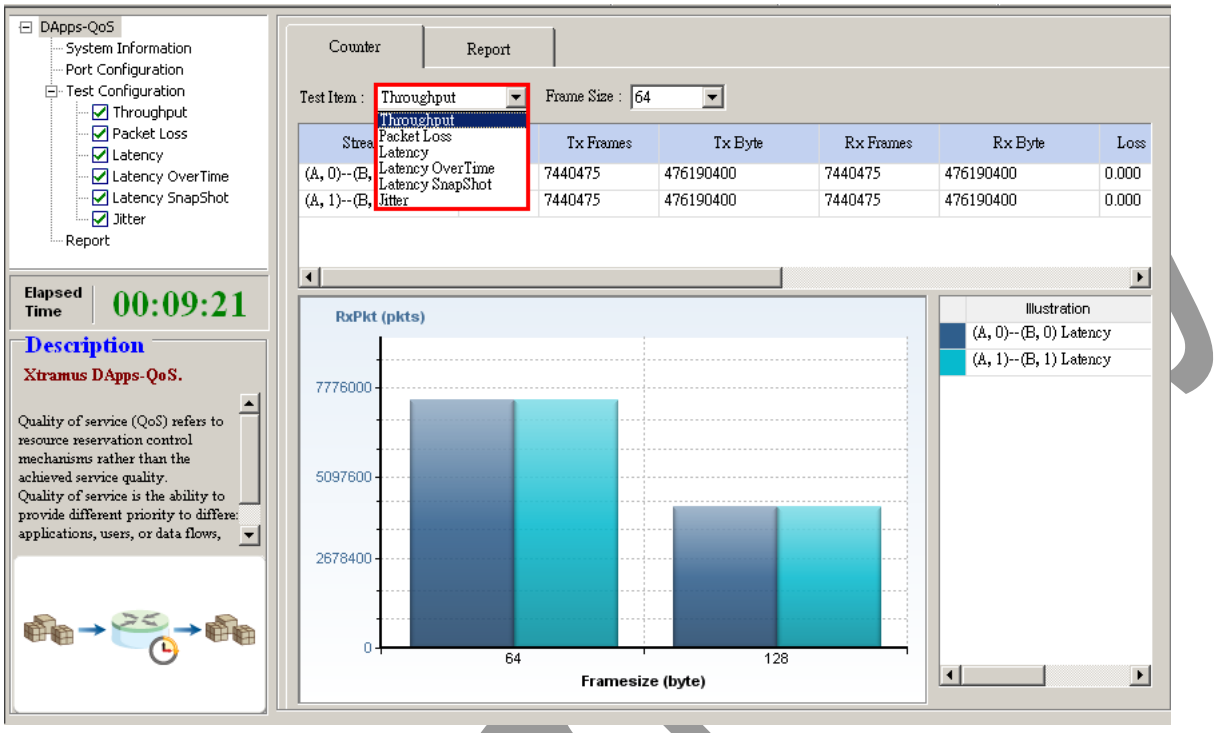
During the test, charts or statics table for results of each test (**Throughput, Packet Loss, Latency, Latency Overtime, Latency Snapshop, Jitter**) will be displayed on the Main Display Screen. NuApps-QoS-RM will switch testing table of each test automatically when finishing the current test and starting the next test. Please note that you can only access the testing table for test you've performed.

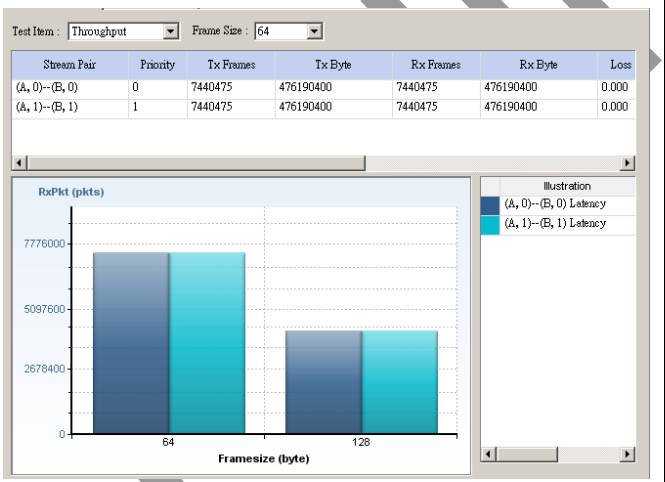
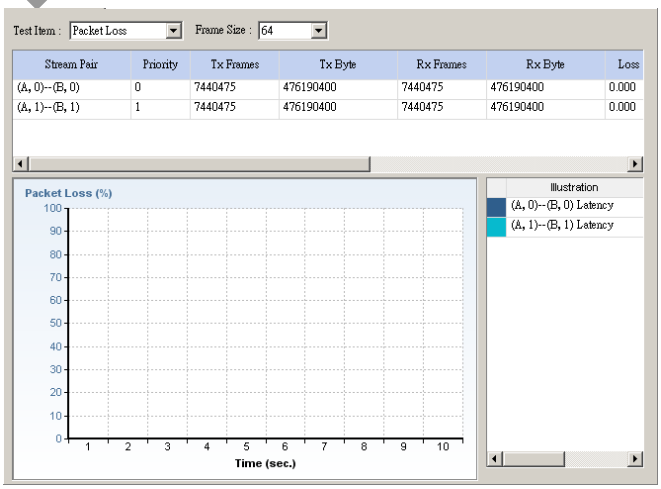


Preliminary

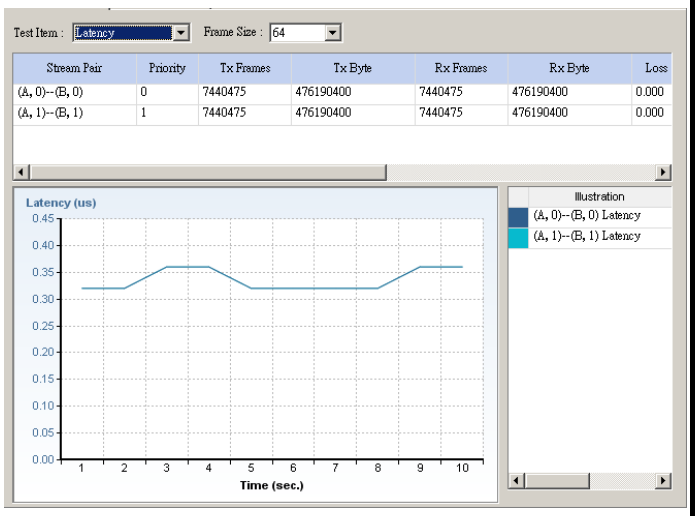
Overview of each testing table

Choose the testing table that you want to evaluate by choosing from the scroll on the **Counter** option shown on the figure below down:



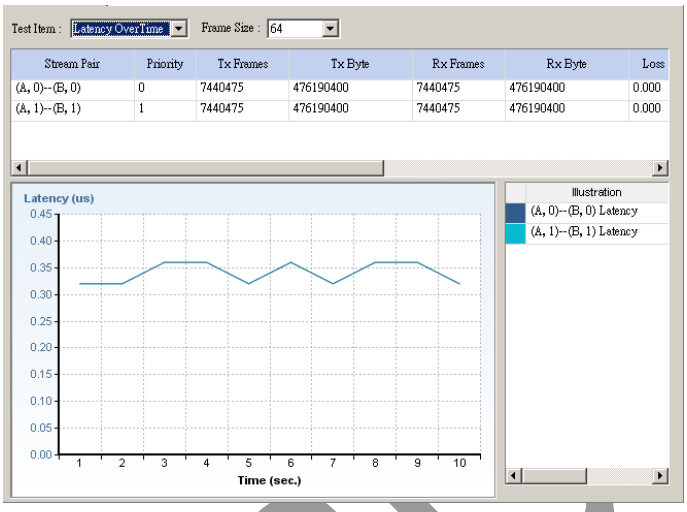
Throughput Test Report	Packet Loss Test Report
	
This chart uses **Rx packet** quantity as Y-axis, and **Frame Size** as X-axis to show DUT's throughput performance.	This chart uses **Packet Loss Rate (%)** as Y-axis, and **Frame Count per Second** as X-axis to show DUT's packet loss ratio.

Latency Test Report


Test Item : Latency
Frame Size : 64
Stream Pair | Priority | Tx Frames | Tx Byte | Rx Frames | Rx Byte | Loss
(A, 0)--(B, 0) | 0 | 7440475 | 476190400 | 7440475 | 476190400 | 0.000
(A, 1)--(B, 1) | 1 | 7440475 | 476190400 | 7440475 | 476190400 | 0.000
Latency (us)
Time (sec.)
Illustration
(A, 0)--(B, 0) Latency
(A, 1)--(B, 1) Latency

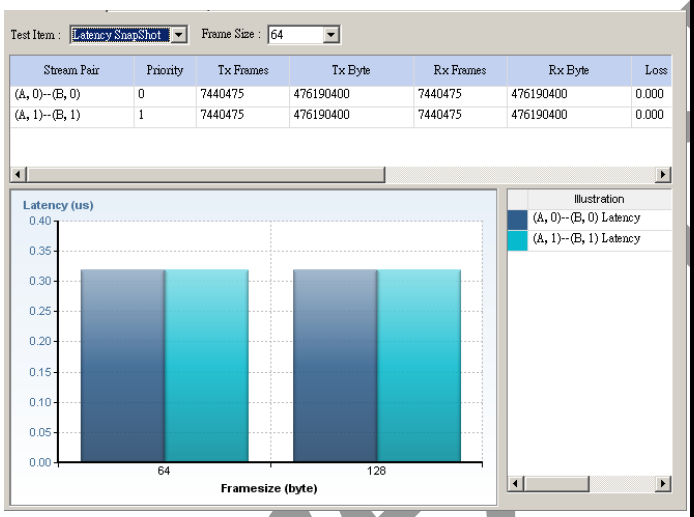
This chart uses **Latency in Microseconds** (μs) as Y-axis, and **time in seconds** as X-axis.

Latency Overtime Test Report


Test Item : Latency OverTime
Frame Size : 64
Stream Pair | Priority | Tx Frames | Tx Byte | Rx Frames | Rx Byte | Loss
(A, 0)--(B, 0) | 0 | 7440475 | 476190400 | 7440475 | 476190400 | 0.000
(A, 1)--(B, 1) | 1 | 7440475 | 476190400 | 7440475 | 476190400 | 0.000
Latency (us)
Time (sec.)
Illustration
(A, 0)--(B, 0) Latency
(A, 1)--(B, 1) Latency

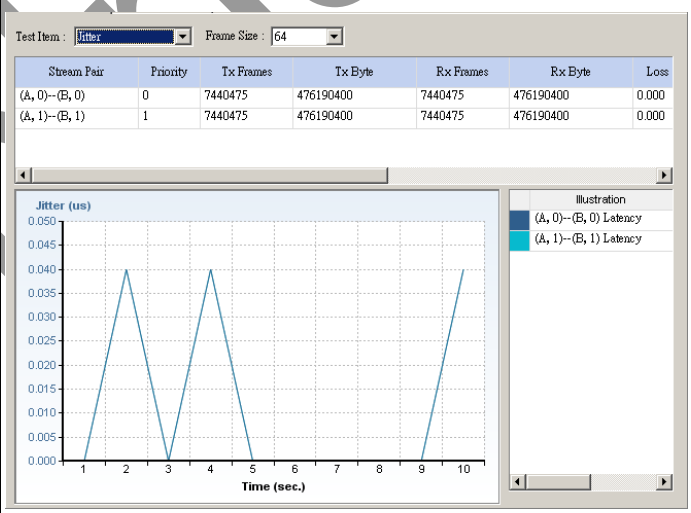
This chart uses **Latency in Microseconds** (μs) as Y-axis, and **time in seconds** as X-axis.

Latency Snapshot Test Report

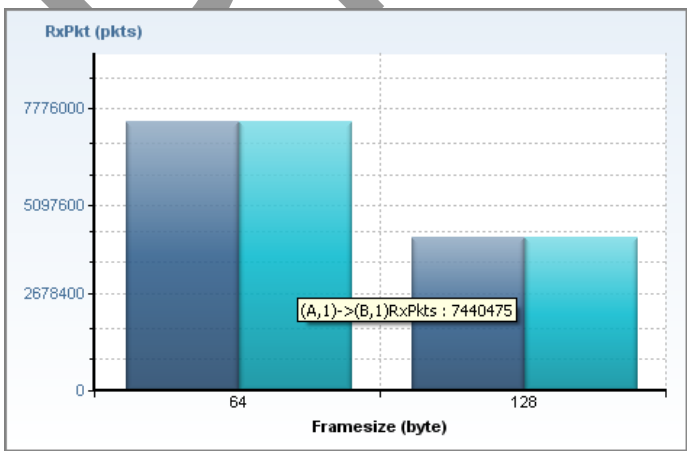

Test Item : Latency SnapShot
Frame Size : 64
Stream Pair | Priority | Tx Frames | Tx Byte | Rx Frames | Rx Byte | Loss
(A, 0)--(B, 0) | 0 | 7440475 | 476190400 | 7440475 | 476190400 | 0.000
(A, 1)--(B, 1) | 1 | 7440475 | 476190400 | 7440475 | 476190400 | 0.000
Latency (us)
Framesize (byte)
Illustration
(A, 0)--(B, 0) Latency
(A, 1)--(B, 1) Latency

This chart uses **Latency in Microseconds** (μs) as Y-axis, and **time in seconds** as X-axis.

Jitter Test Report


Test Item : Jitter
Frame Size : 64
Stream Pair | Priority | Tx Frames | Tx Byte | Rx Frames | Rx Byte | Loss
(A, 0)--(B, 0) | 0 | 7440475 | 476190400 | 7440475 | 476190400 | 0.000
(A, 1)--(B, 1) | 1 | 7440475 | 476190400 | 7440475 | 476190400 | 0.000
Jitter (us)
Time (sec.)
Illustration
(A, 0)--(B, 0) Latency
(A, 1)--(B, 1) Latency

This chart uses **Jitter in Microseconds** (μs) as Y-axis, and **time in seconds** as X-axis.

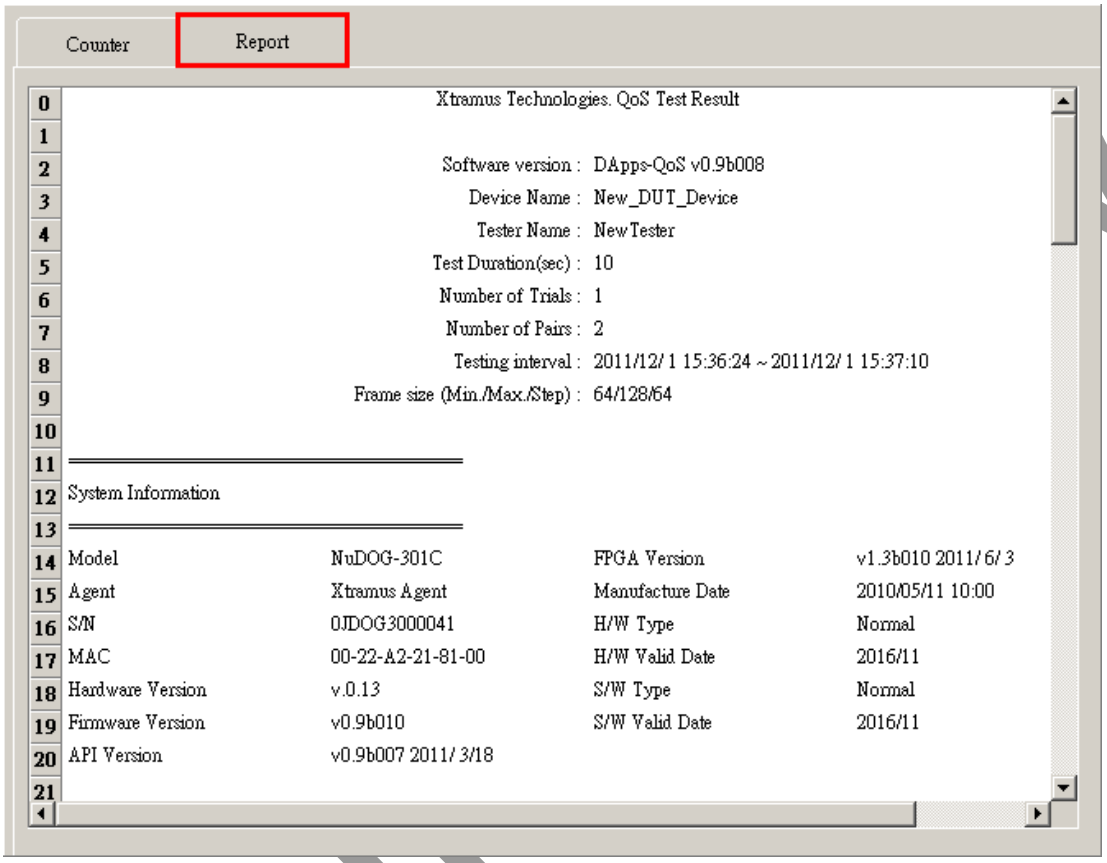


To view detail statistics on the chart, please move the mouse cursor to the part you would like to know more, as shown in the figure on the left.

Viewing Test Result Chart (Continued)

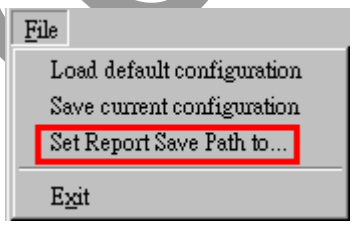
If you would like to view test result charts for other pairs of ports, please click the port pair you would like to view from **Report** on the **System Info/Configuration List**.

Also, you can view test results counter by clicking the **Report** tab as shown on the figure down below. All statistics will be displayed in this table in detail for test result analysis.


Counter
Report
Xtramus Technologies. QoS Test Result
Software version : DApps-QoS v0.9b008
Device Name : New_DUT_Device
Tester Name : NewTester
Test Duration(sec) : 10
Number of Trials : 1
Number of Pairs : 2
Testing interval : 2011/12/1 15:36:24 ~ 2011/12/1 15:37:10
Frame size (Min./Max./Step) : 64/128/64
System Information
Model NuDOG-301C FPGA Version v1.3b010 2011/6/3
Agent Xtramus Agent Manufacture Date 2010/05/11 10:00
S/N 0JDOG3000041 H/W Type Normal
MAC 00-22-A2-21-81-00 H/W Valid Date 2016/11
Hardware Version v.0.13 S/W Type Normal
Firmware Version v0.9b010 S/W Valid Date 2016/11
API Version v0.9b007 2011/3/18

You can save the test results by:

Saving Test Results

	Click **File→Save Report Save Path to…** on your **Menu Bar**.
	Click **Save Report** on your **Quick Launch Buttons**.

Test results and related statistic are available and can be viewed with the "*.xls" file you saved this way. You need Microsoft Excel® to view "*.xls" file.

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8. Appendix – Other Utility Softwares for NuDOG Series

There are several other optional utility softwares for NuDOG-301C/NuDOG-801/NuDOG-101T for different kinds of test requirements. The following section contains brief descriptions of these utility softwares.

DApps-TAP: Network TAP/Loopback Utility

For NuDOG-301C/NuDOG-801/NuDOG-101T, all data streams between two network ports can be duplicated and sent to PC via mini USB port for monitoring and analyzing. The user can specify conditions to filter the packets wanted with DApps-TAP application software. It reduces USB port's network traffic and also cuts down PC resource consumption while dealing with large quantity of packets.

DApps-SG: Control Suite for Multiple Streams Generator

DApps-SG provides a powerful and sophisticated virtual front control panel to manage this device. Two test ports can be configured independently with parameters to define multiple streams and capture capabilities. Traffic for various network protocols can be customized, transmitted, and received on each port. Comprehensive statistics give users an in-depth analysis of the DUT performance.

DApps-NIC: Network Interface Card Simulation Suite

NuDOG-301C has a mini-USB port for PC connection. In addition to network TAP, system control and system upgrade functions. NuDOG-301/NuDOG-801/NuDOG-101T C can also be used as a network interface card. With control software and NuDOG-301/NuDOG-801/NuDOG-101T's hardware conversion, network data streams can flow between NuDOG-301C/NuDOG-801/NuDOG-101T's USB and network port.

DApps-2544: Test Suit Based on RFC 2544

DApps-2544 is a user-friendly and automatic test suite based on industry-standard RFC 2544. It generates and analyzes packets to evaluate the Throughput performances, Latency, Packet Loss, and Back-to-Back of Ethernet switches or routers via this device. The real-time test results display and customized report provide an effective way when examining the DUT.

DApps-2889: Test Suit Based on RFC-2889

DApps-2889 is a user-friendly and automatic test suite based on industry-standard RFC-2889 (partial) to test the DUT. RFC 2889 provides methodology for benchmarking for local area network (LAN) switching devices, forwarding performance, congestion control, latency, address handling and filtering. It extends the methodology already defined for benchmarking network interconnecting devices in RFC 2889.

DApps-MPT: Automatic batch tests for Ethernet device

DApps-MPT is an accurate and efficient software suite for mass-production scale test or batch network test. Various packet generation and reception testing items could be configured to pre-defined testing modes. The utility of DApps-MPT can load testing models easily. All simple and visualized results and detailed testing logs are available to access upon demand. DApps-MPT is a powerful and convenient tool to apply on this device.

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